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**Regulations Governing the Post-Graduate
Programmes of Kuvempu University under
Choice Based Credit System (CBCS)**

Preamble

Kuvempu University is the first affiliate-type university in the State to offer its Post-Graduate Programmes under Choice Based Credit System (CBCS) from 2005-06 academic year successfully. However, during this four-year period, it has experienced some practical difficulties and also obtained the feedback from its stakeholders including the student-community which is the major stakeholder group. This necessitated a thorough and comprehensive revision of its Regulations governing the Post-Graduate Programmes. Hence, this Regulations.

Draft Regulations Governing the Post-Graduate Programmes of Kuvempu University under Choice Based Credit System (CBCS)

- 01.**Title:** This Regulation shall be called **Kuvempu University Regulations Governing the Post-Graduate Programmes under Choice Based Credit System, 2010.**
- 02.**Commencement:** This Regulation shall come into force from the date on which it is assented to by the Chancellor.
- 03.**Definitions:** In this Regulations, unless the context otherwise requires,
 - 3.1. **University** means Kuvempu University,
 - 3.2. **Post-Graduate Programmes** means Master's Degree Programmes excluding P.G Diploma, M.Phil and Ph.D Programmes,
 - 3.3. **Student** means the student admitted to Post-Graduate Programme under this Regulations,
 - 3.4. **Degree** means Master's Degree,
 - 3.5. **Board of Studies** means the Board of Studies (Post-Graduate) of Kuvempu University in the discipline/subject concerned,

- 3.6. **Academic Council** means Academic Council of Kuvempu University,
- 3.7. **Fee** means the fee prescribed by the University for the Post-Graduate Programmes from time to time,
- 3.8. **Course** means a logical part of a subject matter of the programme. Alternatively, this shall be called a paper,
- 3.9. **Hard Core Courses** means fundamental courses which every student admitted to a particular Post-Graduate Programme should study and complete successfully, besides other courses, to be eligible to receive the Degree and which cannot be substituted by any other course/s,
- 3.10. **Soft Core Courses** means the courses in a stream of specialization which a student selects out of two or more streams of specialization offered by the Department. In some specialized academic programmes such as MTA (Tourism Administration), MBFI (Banking, Finance and Insurance), etc, the Soft Core Courses shall mean the allied courses,
- 3.11. **Elective Courses** means the inter-disciplinary courses offered by a Department for the students of other Departments,
- 3.12. **Advisory Committee** means the Advisory Committee in the School constituted by the University,
- 3.13. **Credit** means the unit by which the teaching/course work is measured. For this Regulation, one Credit means one hour of teaching work or two hours of practical work per week for 16 weeks in a semester. Each course shall be designed with different pedagogy such as lectures, tutorials, case studies, laboratory work, seminars, practical training, report and/or assignment writing, viva-voce, etc to meet effective teaching and learning needs, and the credits shall be assigned accordingly, and

- 3.14. **Grade** means an index of conversion of marks secured by a student after completing prescribed credits and relevant examination in each Course. Grade shall be computed by considering both the marks secured and the credits earned in each course, semester and the whole academic programme.

04. Eligibility to Apply for Admission

- 4.1. The students who have successfully completed the three-year Degree programme or any other Degree programme of this university or of any other university recognized as equivalent thereto by this university shall be eligible to apply for admission to the P. G programme/s of this University provided they possess the minimum percentage of marks as may be prescribed by the University from time to time, and
- 4.2. The admission to any P. G Programme shall be based on the Admission Rules of the University considering the %age of marks in cognate or any other subject/s at the Graduate Studies, total intake fixed for each P. G Programme, reservation of seats to different sections of the society as per the Reservation Policy of the Government, etc and/or the performance of the applicants in the entrance test.

05. Duration of the Programme

- 5.1. The Programme of study for the Post-Graduate Degree shall normally extend over a period of two academic years (in the case of M.Ed, it shall be one year; and three years in the case of M.Tech and MCA), each academic year comprising of two semesters, and each semester comprising of 18 weeks which shall include 16 weeks for class/course work and the immediate next 2 weeks for conducting semester-end examination,

- 5.2. No student shall be permitted to obtain P. G Degree earlier than four semesters (in the case of M.Ed, not earlier than two semesters; and six semesters in the case of M.Tech and MCA) or to take more than eight semesters (in the case of M.Ed, it shall be four semesters; and 12 semesters in the case of M.Tech and MCA). That means, the student shall complete the academic programme within four years (in the case of M.Ed, it shall be within two years; and six years in the case of M.Tech and MCA) from the date of admission to the first semester of Post-Graduate Programme, and
- 5.3. Whenever the curricula are revised, and whenever a candidate is reappearing, within the above maximum period (5.2), he/she shall be allowed to reappear for the P. G Degree examinations according to the pre-revised curricula (i.e., the curricula in which he/she has studied the Course/s as regular student).

06. Attendance

- 6.1. Each course shall be taken as a unit for the purpose of calculating the attendance,
- 6.2. Each teacher shall mark the attendance in every hour of teaching of each course. The attendance shall also be notified on the Notice Board of the Department during first week of every subsequent month,
- 6.3. Certain portion of internal assessment marks shall be allotted for the regularity of the student in attending the classes,
- 6.4. A student shall be considered to have satisfied the requirement of attendance for each course, if he/she has attended not less-than 75% of the number of classes held up to the end of the semester including tests, seminars, group discussion, practical, tutorials, special classes and lectures, etc,

6.5. However, if a student represents his/her Institution, University, State or Nation in Sports, NCC, NSS or Cultural or any other officially sponsored activities, he/she shall be eligible for the attendance benefit for the actual number of days participated subject to a maximum of 20 days in a semester based on the specific recommendations of the chairperson of the Department concerned. This facility (attendance benefit) shall also be extended to the students who were absent due to accident/serious illness leading to actual hospitalization. In both the cases, the %age of classes attended shall be determined (for the purpose of Regulations 6.4 and 9.9) by dividing the number of hours of classes attended by the number of hours of classes engaged (excluding the classes held on the days he/she was not present due to hospitalization or participation in sports, etc), and

6.6. A student who does not satisfy the requirements of attendance (atleast 75% in each course) shall be ineligible to appear for the examination of that course/s. And the student shall repeat that course in the subsequent year/s as regular student at his/her own risk.

07. Medium of Instruction: The medium of instruction shall normally be English except in relevant/concerned languages such as Hindi, Kannada, Sanskrit, Urdu, etc.

08. Structure of Academic Programmes and Min-Max Credits

8.1. There shall be four categories of courses viz., Hard Core Courses, Soft Core Courses, Elective Courses and Soft Skill Courses for every P. G Programme,

8.2. Hard and Soft Core Courses shall be the courses offered by the concerned Department. Each student shall compulsorily undertake project work leading to Project Report and it shall be a part of Hard Core Courses,

- 8.3. Guiding of every 10 students or less of final semester in their Project Report shall be treated as equivalent to one hour of teaching work per week subject to a maximum of 2 hours per teacher per week,
- 8.4. Elective Courses are the courses offered for the students of other Departments. Further, these courses, offered by Science Departments, shall be without laboratory practical as the group of students taking these courses is diverse,
- 8.5. **Soft Skill Courses**
- 8.5.1. Besides, there shall be three Soft Skill Courses viz., Communication Skills, Computer Skills and Life Skills. These Courses shall be offered by the Departments of Studies in English, Computer Science and Commerce respectively for the students of all the Departments of P. G Studies with necessary financial and other support from the University,
- 8.5.2. Each of these three courses shall carry one credit and there shall be no semester-end examination for these courses,
- 8.5.3. Further, the credits of these courses shall not be considered for computing the Cumulative Grade Point Average (CGPA) which is the base for the declaration of result of the students,
- 8.5.4. However, to successfully complete the Master's Degree, every student must complete these courses earning three credits within the first two semesters. The chairpersons of the respective Departments (i.e., the Departments conducting these courses) shall compile the credits and certify the successful completion of these Soft Skill Courses, and

8.5.5. However, the students who have studied atleast one course on Computer Skills at the Graduate Studies and/or the students who are required to study atleast one course on Computer Skills/Applications as either Hard Core or Soft Core Course at their post-graduate studies shall be exempted from Computer Skills course. Similarly, the students of M.A (English) shall be eligible for exemption from Communication Skills course. In both the cases, the Chairpersons of the concerned Departments (i.e., the Departments in which these students have taken admission for their P. G Programme) shall send a certificate to this effect to the Registrar (Evaluation) who shall, in turn, take steps to include one credit in the marks statements of these students.

- 8.6. The credits for each Hard Core Course shall range from 3 to 6 and that of Soft Core Course from 2 to 4. In the case of Elective Courses, each course shall carry 2 credits. Further, in the case of Science subjects, each practical for 2 hours per week for 16 weeks in a semester shall carry one credit,
- 8.7. A student shall register for a minimum of 18 credits and a maximum of 32 credits per semester,
- 8.8. The minimum and maximum (min-max) number of credits for the Master's Degree Programmes shall be as detailed below,

Sl. No	Academic Programme	Duration (years)	Minimum Credits	Maximum Credits
01	M.Ed, etc	01	40	50
02	M.A (in different disciplines), M.Com, M.Sc (in different disciplines), MSW, MTA, MBFI, MBA, M.P.Ed, LL.M, etc	02	80	100
03	M.Tech, MCA, etc	03	120	150

8.9. Within the above Min-Max Credits, the Boards of Studies in different disciplines/subjects shall prescribe the structure of academic programmes – number and titles of Hard and Soft Core Courses, course inputs, course-wise credits and weekly teaching hours, examination duration, question paper pattern, maximum marks, Elective Courses and their course inputs, etc, and

8.10. Elective Courses

8.10.1. Each Department of P. G Studies shall offer, for the students of other Departments, a minimum of one and a maximum of two Elective Courses with two credits per course in the II (even) and III (odd) Semesters,

8.10.2. Students of all P. G Programmes shall select, study and successfully complete atleast one Elective Course (out of a number of Elective Courses offered by other Departments) each in II and III Semester earning atleast four credits, and

8.10.3. Students from the same Department shall not be eligible to select the courses offered as Elective Courses by their Department.

09. Continuous Assessment Programmes and Evaluation

9.1. Out of the total marks for each course, 25 marks shall be earmarked for Continuous Assessment (Internal Assessment) and the remaining 75 marks for the semester-end examination,

9.2. In the case of Project Report, it (Project Report) shall be evaluated for 75 marks and the viva-voce examination shall be conducted by the Board of Examiners for the remaining 25 marks,

- 9.3. In the case of elective courses, each elective course shall carry a maximum of 50 marks comprising of 40 marks for semester-end examination and 10 marks for internal assessment. Internal Assessment marks shall be awarded to the students based on a test (5 marks), assignment-cum-group discussion (2.5 marks), and regularity of the students in attending the classes (2.5 marks as per Regulation 9.9 below),
- 9.4. Each course/semester shall have continuous evaluation which shall include tests, seminars/group discussion, field work-based/library-based assignments, and regularity to the class work,
- 9.5. Session Tests (minimum of two for each course per semester) for the internal assessment at regular interval shall be conducted. Any student who could not attend any of the session tests due to medical reason or due to extra-ordinary circumstances, a separate test shall be conducted before the end of semester classes by the course teacher under intimation to the chairperson of the Department,
- 9.6. For the purpose of uniformity, first session test shall be conducted during 9th week of the semester for the syllabi covered till then. And the second session test shall be conducted during the 16th week of the semester for the entire syllabi,
- 9.7. The marks obtained in the tests shall be displayed on the notice board of the Department. The tests and assignments for each course shall be written in a separate book and after evaluation, the same should be shown to students,

9.8. 25 marks earmarked for continuous assessment in each of the Hard Core and Soft Core Courses shall be distributed among different activities as follows,

Sl. No	Continuous Assessment Programme	Maximum Marks
01	Two Session Tests (5 marks per test)	10
02	Seminar/Group Discussion (to be assessed on the basis of writing, comprehension, communication, articulation, and presentation skills)	05
03	Field Work and/or Assignments	05
04	Regularity and Attendance	05

9.9. Five marks in each course earmarked for regularity in attending the classes shall be awarded as follows,

% age of Class Work Attended	Marks to be Awarded	
	Hard and Soft Core Courses	Elective Courses
< 75	00	00
≥ 75 < 80	01	0.5
≥ 80 < 85	02	1.0
≥ 85 < 90	03	1.5
≥ 90 < 95	04	2.0
≥ 95	05	2.5

9.10. Students seeking the attendance benefit/condonance of attendance shortage (as under Regulation 6.5) shall produce attendance/medical certificate/s from the concerned authority and that period shall be considered for the award of marks as under Regulation 9.9,

- 9.11. In each of the activities pertaining to the internal assessment marks, complete transparency shall be ensured by the course teacher, and the student who is not satisfied with the marks awarded to him/her can make an appeal to the chairperson of the Department with justifiable reasons. On receipt of appeal, the chairperson of the Department shall convene a meeting of the Departmental Council and redress the grievances of the student appropriately, and
- 9.12. In case of candidates who appear for improvement examination, the marks obtained in the internal assessment shall not be revised. There shall be no improvement for internal assessment.

10. Semester-end Examination and Evaluation

- 10.1. There shall be semester-end examination of three-hour duration for 75 marks for each of Hard and Soft Core Courses. However, in the case of Elective Courses, the semester-end examination shall be conducted for 40 marks for 1 ½ hours for each course,
- 10.2. Project Reports and answer scripts of the semester-end examination shall be evaluated by two examiners (preferably, one internal and another external; however, under no circumstances a script/Project Report shall be valued only by two internal examiners). The marks awarded to that answer script/Project Report shall be the average of these two evaluations,
- 10.3. If the difference in the marks between two evaluations exceeds 20% of the maximum marks, such a script/Project Report shall be valued by a third external examiner. The marks awarded to that answer script or Project Report shall be the average of two nearer marks out of the three evaluations,

- 10.4. In the fourth semester, the Project Report shall be evaluated for 75 marks by both internal and external examiners. And for the remaining 25 marks, project viva-voce examination shall be conducted by the Board of Examiners, and
- 10.5. In the case of the academic programmes in the Faculty of Science and Technology, there shall be semester-end practical examination for 3 - 4 hours duration carrying 50 marks per practical.
11. **Challenge Evaluation:** A student who desires to challenge the marks awarded to him/her in the semester-end examination may do so by submitting an application along with the prescribed fee to the Registrar (Evaluation) within 15 days from the date of announcement of the result. Such candidates shall be provided with a photo copy of the answer book after concealing the name and signature of the examiners. The challenged valuation script shall be got valued by another external examiner. The marks awarded to that answer script or Project Report shall be the average of two nearer marks out of the three/four evaluations.

12. Carry-over Facility

- 12.1. CBCS is a fully carry-over system,
- 12.2. However, the P. G programme should be completed by the students within double duration of the normal course period,
- 12.3. During the normal course period, the candidates shall normally be permitted to take examination of odd semester courses at the end of odd semester, and examination of even semester courses at the end of even semester, and
- 12.4. However, in the case of the students who have completed the course period and also those who are in the final semester shall be permitted to appear in the cross semester examination (i.e., odd semester courses with even semester course examination and vice-versa) after paying an additional fee per course as prescribed by the University from time to time.

13. **Minimum for Pass and Provision for Improvement of the Result**

- 13.1. Minimum for pass in each course shall be 45% (both the internal assessment marks and semester-end examination marks put together), out of which atleast 35% (26 marks out of 75) shall be from semester-end examination,
- 13.2. A candidate shall be exempted from re-appearing for the examination in a course in which he/she has secured not less-than 45% in the previous examinations as above (Regulations 13.1),
- 13.3. A candidate who has secured atleast 45% marks in each of the courses prescribed for the academic programme and who has earned the minimum credits (as specified in Regulations 8.5.4, 8.7, 8.8 and 8.10.2) shall be considered to have passed the Master's Degree, and
- 13.4. The candidates who seek to improve their results of any of the semesters shall do so by submitting a representation along with a prescribed fee to the Registrar (Evaluation) and surrendering the Degree Certificate/Provisional Pass Certificate/Original Marks Cards of that semester/s within the maximum period as specified in Regulations 5.1 to 5.3.

14. **Grading and Declaration of Result**

- 14.1. **Grade** means an index of conversion of marks secured by a candidate after completing the prescribed credits and relevant examination in each course,
- 14.2. **Grade and Credit Points** are computed for each course considering the marks secured and the credits earned in each course. **Grade Points** shall be computed by dividing the marks secured by the candidate in each course by 10% of the maximum marks for that course. And **Credit Points** are determined by multiplying the Grade Points in each course by the credits of that course. Both the Grade Points and Credit Points shall be computed for each course in each semester,

14.3. **Grade Point Average (GPA)** shall be computed and given to each candidate based on his/her semester performance. This shall be determined by dividing the sum of credit points earned by the student in all the courses of a semester by the total number of credits for which the candidate has taken examination in that semester,

14.4. **Cummulative Grade Point Average (CGPA)** is computed for the whole academic programme considering the aggregate of Credit Points of all the semesters earned by the student and dividing this sum by the total credits of all the semesters,

14.5. The CGPA obtained as above (14.4) shall be the base for the determination of Grade and for the declaration of the result as follows. However, the overall %age of marks shall be shown in the marks statement of final semester.

CGPA	Result, Grade	Description of Result Grade
< 4.50	D	Fail
$\geq 4.50 < 5.00$	C	Pass
$\geq 5.00 < 5.50$	B	Second Class
$\geq 5.50 < 6.00$	B ⁺	High Second Class
$\geq 6.00 < 6.50$	A	First Class
$\geq 6.50 < 7.50$	A ⁺	High First Class
≥ 7.50	A ⁺⁺	First Class with Distinction

15. Schools of Studies

15.1. For the successful implementation of CBCS, the Departments of Studies shall be classified into ten Schools of Studies as specified below. However, it shall be noted here that the list presented below is only indicative but not exhaustive and the University shall have the power to add any new Department of Studies as and when established into the relevant School of Studies,

Sl. No	School	Faculty	Departments
01	Bio-sciences	Science and Technology	Applied Zoology, Applied Botany, Bio-Technology, Microbiology, etc
02	Business Studies	Commerce	Commerce, Institute of Management Studies, Tourism Administration, etc
03	Chemical Sciences	Science and Technology	Chemistry, Industrial Chemistry, Bio-chemistry, etc
04	Earth and Environmental Sciences	Science and Technology	Applied Geology, Environmental Science, etc
05	Education	Education	Physical Education, Education, Adult Continuing Education and Outreach Extension etc
06	Engineering and Technology	Engineering and Technology	E & E, E & C, Information Technology, Computer Science, Civil Engineering, Environmental Engineering, etc
07	Languages and Literature	Arts	English, Hindi, Kannada, Sanskrit, Urdu, etc
08	Law	Law	Law, etc
09	Physical Sciences	Science and Technology	Mathematics, Computer Science, Physics, Electronics, Library Sciences, etc
10	Social Sciences	Arts	Sociology, Political Sciences, History and Archeology, Economics, Social Work, Journalism and Mass Communication, etc

- 15.1. Every School shall be headed by a Director who shall be nominated by the university for a period of two years among the Professors on rotation basis according to seniority in that School. If senior most Professor is Dean, then the next senior most Professor shall be appointed as Director,
- 15.2. Each School shall have an Advisory Committee consisting of all Professors and Readers, and one Lecturer from each of the constituent Departments of School on rotation basis according to seniority for a period of two years,
- 15.3. The Advisory Committee shall meet at least twice in a semester. In the last meeting of each semester, the committee shall finalize the internal assessment marks of the students of all the constituent Departments of the School and also that of colleges offering P. G Programmes for the semester. Under the circumstances of drastic variations in the Internal Assessment Marks, the Advisory Committee shall be competent to bring in the normalization,
- 15.4. However, the Chairperson of the Departmental Council shall continue to function as the administrative and academic head of the concerned Department. And, the Director of the School shall co-ordinate and integrate the academic programmes and all logistics for the successful implementation of CBCS in a particular School. Further, the Director shall also be in-charge of the common facilities like, instrumentation centre, seminar hall, computer centre, lecture halls, common laboratories, etc so that all the common facilities are utilized to the maximum extent,
- 15.5. Similarly, the Deans of Faculties shall continue to function as per Karnataka State Universities Act, 2000, and
- 15.6. The existing structure and modalities of Boards of Studies, Faculties and Boards of Examiners shall continue to function as per the existing rules/Provisions of KSUA, 2000 even under CBCS.

16. Repeal and Savings

- 16.1. Notwithstanding anything contained in this Regulations, the Provisions of any Order, Rule or Regulations in force shall be inapplicable to the extent of their inconsistency with this Regulations,
- 16.2. The University shall issue such orders, instructions, etc and prescribe such format, procedure, etc as it may deem fit to implement the Provisions of this Regulations, and
- 16.3. If any difficulty arises in the implementation of this Regulations, the Vice-chancellor shall, in consultation with the Deans, be competent to issue necessary clarification. And he/she shall, at the earliest possible opportunity thereafter, report the action taken by him/her to the Academic Council for ratification.

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Assented by the Chancellor on 16-08-2010
From the academic year 2010-11



Bachelor of Business Management (BBM Degree) 2010 Scheme

Draft Regulations governing the Bachelor of Business Management Degree Programme of Kuvempu University under Semester Scheme

(Section 44 (1), Karnataka State Universities Act, 2000)

1. Title and Commencement

This Regulations shall be called **Kuvempu University Regulations governing the Bachelor of Business Management Degree Programme under Semester Scheme, 2010-11**, and

These Regulations shall come into force from the date on which it is assented to by the Chancellor.

2. Definitions: In this Regulations, unless the context otherwise requires,

1. **University** means Kuvempu University,
2. **Bachelor of Business Management Degree** means Graduate Degree Programme in Management(B.B.M),
3. **Student** means the student admitted to B.B.M Degree Programme under this Regulations,
4. **Degree** means Bachelor Degree in Business Management,
5. **Board of Studies** means the Board of Studies in Business Management (Graduate Studies) of Kuvempu University,
6. **Academic Council** means Academic Council of Kuvempu University,
7. **Fee** means the fee prescribed by the University for B.B.M Programme from time to time, and
8. **Course** means a logical part of a subject matter of the programme. Alternatively, this shall be called a paper.

3. Eligibility to Apply for Admission

1. The students who have successfully completed the two- year Pre-university examination (PUC) conducted by the Karnataka Pre-university Board or two-year Job-oriented Course or three-year Diploma Course conducted by the

Directorate of Vocational Education/Technical Education Board or any other examination considered as equivalent thereto by this University shall be eligible to apply for admission to the first semester of B.B.M Degree Programme,

2. However, the candidates who have passed the three-year Diploma in Commercial Practice or Secretarial Practice or Modern Office Practice conducted by the Department of Technical Education, Government of Karnataka shall be eligible for admission to the third semester of B.B.M programme directly without the benefit of exemption in any course/s of Semesters III – VI, and
3. Similarly, the candidates who have passed the two-year Diploma in Business Administration (after PUC) conducted by the Department of Technical Education, Government of Karnataka shall be eligible for admission to fifth semester of B.B.M programme directly without the benefit of exemption in any Course/s of Semesters – V and VI of B.B.M. Further, these candidates shall pass the Language Courses of Semesters I – IV of B.B.M Programme by studying on their own.
4. **Admission of Students of other Universities:** The candidate who has completed the first year or first two years of B.B.M programme in the institution coming under the jurisdiction of other university shall be eligible to take admission to third semester or fifth semester of B.B.M of this University respectively subject to the following conditions.
 1. The candidate should produce the migration certificate from the concerned university,
 2. If the candidate has not successfully completed one or more course/s of Semester/s – I and/or II, or Semester/s – I and/or II and/or III and/or IV of B.B.M, as the case may be, shall take and pass the examination/s of this course/these courses in his/her parent university. Alternatively, the candidate shall take and pass all the courses of first year (Semesters – I and II) or first and second years (Semesters – I to IV) of this University as the case may be,
 3. The candidate who intends to retain the results of the examinations of the university studied previously shall be eligible to do so subject to the condition that he/she is not eligible for any Rank and Class in this University's examination (Regulations 15.1 and 15.2),
 4. The candidate seeking admission to Semester – III or V of B.B.M of this University shall be eligible for admission provided he/she fulfils the requirements of eligibility for promotion to the next higher class (viz., Semester – III or V) in accordance with this Regulations,
 5. Further, the candidate seeking admission to Semester – III or V of B.B.M of this University shall be liable to pass (by self-study) those courses of B.B.M – I year or B.B.M – I and II years of this University if he/she has not studied the same in his/her parent University, and

6. The candidate who migrates from other university shall also fulfill the conditions and requirements regarding admission prescribed for the students of this University.

5. Duration of the Programme

1. The Programme of study for B.B.M Degree shall normally extend over a period of three academic years, each academic year comprising of two semesters, and each semester comprising of 16 weeks of class work,
2. No student shall be permitted to obtain B.B.M Degree earlier than six semesters or to take more than twelve semesters. That means, the student shall complete the academic programme within six years (but not earlier than three academic years) from the date of admission to the first semester of B.B.M Programme, and
3. Whenever the curricula are revised, and whenever a candidate is reappearing, within the above maximum period (Regulation 5.2), he/she shall be allowed to reappear for the B.B.M Degree examination according to the pre-revised curricula (i.e., the curricula in which he/she has studied the Course/s as regular student).

6. Medium of Instruction

1. The medium of instruction shall normally be English,
2. However, the students shall be permitted to write their examination even in Kannada, and
3. In the case of Languages such as Kannada, Hindi, Sanskrit, Urdu, etc, the medium of instruction and examination shall be in the concerned Language.

7. Structure of B.B.M Programme

1. The students of B.B.M programme shall study the following courses as prescribed by the Academic Council of the University or other Courses and Course Contents as may be prescribed by the Academic Council of the University from time to time.

Bachelor of Business Management (BBM Degree)

2009 scheme Course structure

Sl.no	Code	Subject	No of teaching hours per week
I semester			
1	BM101	Communicative English –I	04
2	BM102	Communicative Kannada/Urdu/Hindi/Sanskrit-I	04
3	BM103	Financial Accounting –I	04
4	BM104	Managerial Economics	04
5	BM105	Principles of Management	04
6	BM106	Business Environment	04
II Semester			
7	BM201	Communicative English –II	04
8	BM202	Communicative Kannada/English/Urdu/Sanskrit-II	04
9	BM203	Financial Accounting-II	04
10	BM204	Money and Financial System	04
11	BM205	Marketing Management	04
12	BM206	Financial Services	04
13	BM207	Tourism Management	04
III Semester			
14	BM301	Communicative English III	03
15	BM302	Communicative Kannada/Hindi/ Urdu/Sanskrit-III	03
16	BM303	Law & Practice of Banking	04
17	BM304	Business Legislations	04
18	BM305	Computer Applications in Business	04
19	BM306	Business Taxation-I	04
20	BM307	Environment Science	04
IV Semester			
21	BM401	Communicative English IV	03
22	BM402	Communicative Kannada/Hindi/ Urdu/Sanskrit-IV	03
23	BM403	Human Resource Management	04
24	BM404	Business Mathematics	04
25	Bm405	Insurance Management	04
26	BM406	Business Taxation –II	04
27	BM407	Indian Constitution	04
V semester			
28	BM501	Cost Accounting	04
29	BM502	Statistics for Management –I	04
30	BM503	Entrepreneurship Development	04
31	BM504	Quantitative Techniques	04
32	BM505	Business Research Methods	04
33	BM506	Elective – Paper I	04
34	BM507	Elective – Paper II	04
VI Semester			
35	BM601	Management Accounting	04
36	BM602	Statistics for Management-II	04
37	BM603	Financial Management	04
38	BM604	Organizational Behavior	04
39	BM605	Elective – Paper III	04
40	BM606	Elective - Paper IV	04
41	BM607	Project Report	04

Note: * WTHs = Weekly Teaching Hours; ED = Examination Duration (hours);
 IA = Maximum Marks for Internal Assessment; and SEE = Maximum Marks for
 Semester-end Examination

2. Out of the two Languages of Semesters – I to IV of B.B.M selected by the students, at least one shall be an Indian Language such as Kannada, Hindi, Sanskrit, Urdu, Tamil, Telugu, Malayalam, etc. However, in the case of foreign nationals, the requirements of an Indian Language may be waived off by the University,
3. The student shall be offered the same two Languages for the B.B.M programme which he/she has studied at the Pre- university level. However, a student may opt for Kannada even if he/she has not studied it at the Pre-university level,
4. The University may permit private study of a Language by a student if the number of students opting for that Language is less-than five, and allow him/her to appear for the examination in that Language without insisting on attendance, and
5. A student who has taken admission to B.B.M – V Semester shall select any one of the following as his/her Specialization Stream and both the courses in that Stream being compulsory. Course – I of the Specialization Stream selected by the student shall be studied in B.B.M – V Semester and Course – II of the same Specialization Stream shall be studied in B.B.M – VI Semester.

ELECTIVES

Elective-1: Human Resource Management

Paper - I : Human Resource Development
 Paper - II : Industrial Relations
 Paper – III : Labour Welfare and Social Security
 Paper – IV : Labour Laws

Elective-2: Marketing Management

Paper –I : Production and sales Management
 Paper-II : Advertising & Media management
 Paper-III : International Marketing
 Paper-IV : Marketing of Industrial goods.

Elective-3: Finance

Paper-I : Financial Markets and Services
 Paper-II : International Finance
 Paper-III : Cost and Financial Analysis
 Paper-IV : Portfolio Management

Elective-4: Information Technology Management

- Paper-I : E-Business and Web Designing
 Paper-II : Enterprise Resource Planning
 Paper-III : Database Management
 Paper-IV : System Analysis and Design.

Elective –5 : Tourism

- Paper- I : Tourism Industry
 Paper- II : Tourism Marketing
 Paper-III : Tourism Product
 Paper-IV : Travel Agency and Tour Operators Business.

6. A student in B.B.M – VI Semester shall have Project Work, and prepare and submit the Project Report under the guidance of a Teacher before the commencement of examination of Semester - VI,
7. The candidate who fails to submit the Project Report shall not be permitted to take the whole examination of B.B.M – VI Semester, and
8. Besides the above Courses (as stated under 7.1 above), the students of B.B.M Programme shall be offered the following additional Courses which are mandatory.
 1. Environmental Science (it shall be offered either in Semester – I or in Semester – II), and
 2. Constitution of India (it shall be offered in any one Semester from Semester – I to Semester – IV).

8. Attendance

1. Each course shall be taken as a unit for the purpose of calculating the attendance,
2. A student shall be considered to have satisfied the requirement of attendance for each course, if he/she has attended not less-than 75% of the number of classes held up to the end of the semester including tests, seminars, group discussion, practical, tutorials, special classes and lectures, etc,
3. However, if a student represents his/her Institution, University, State or Nation in Sports, NCC, NSS or Cultural or any other officially sponsored activities, he/she shall be eligible for the attendance benefit for the actual number of days participated subject to a maximum of 20 days in a semester based on the specific recommendation of the Principal of the Institution concerned. This facility (attendance benefit) shall also be extended to the students who were absent due to accident/serious illness leading to actual hospitalization. In both the

cases, the %age of classes attended shall be determined by dividing the number of hours of classes attended (by the student) by the number of hours of classes engaged (excluding the classes held on the days he/she was not present due to hospitalization or participation in sports, etc), and

4. A student who does not satisfy the requirements of attendance (atleast 75% in each course) shall be ineligible to appear for the examination of that whole semester. And he/she shall repeat that semester as regular student in the next year/s.

9. Change of Subjects

1. Change of subjects (only in the case of Languages and Specialization Streams) shall be permitted by the University, if the requisition from the student is received within 10 days from the date of commencement of the classes on the specific recommendation of the Principal,
2. Change of subject shall be approved by the University on such terms and conditions as it may deem fit. Option to change the subjects is exercisable by the student/s only once during the three-year period, and
3. Whenever a change in subject is permitted during a Semester, the attendance in that particular course shall be calculated from the date of change of subject. However, while calculating the attendance for the whole Semester, the attendance in the previous subject studied by the candidate shall also be taken into account.

10. Eligibility to Teach the Courses

1. All the Courses, except Languages, shall normally be taught by the teachers possessing at M.Com or MBFI or MBA Degree,
2. However, the Courses “Managerial Economics” (Course 104) and “Money and Public Finance” (Course 204) of B.B.M – I and II Semesters respectively shall be taught by the teachers possessing either M.A (Economics) or MBE (Business Economics) or M.Com or MBFI or MBA Degree,
3. “Business Mathematics” course (Course 206) of B.B.M – II Semester, and both the Courses of Specialization Stream, Quantitative Techniques, (Courses 507J1 and 607J2) shall be taught by the teachers possessing either M.Com or MBFI or M.Sc (Mathematics or Statistics) or MBA Degree,
4. Both the courses of Specialization Stream, “Tourism and Hospitality Management” (Courses 507H1 and 607H2) shall be taught by the teachers possessing M.Com or MBFI or MTA Degree, and
5. The Courses, “Information Technology – I and II” (Courses 306 and 406) of B.B.M – III and IV Semesters respectively and both the Courses of Specialization Stream, E-commerce (Courses 507I1 and 607I2) shall be taught by the teachers possessing M.Com or MBFI or

MCA or M.Sc (Computer Science) or M.E (Computer Engineering) or MBA Degree.

11. Continuous Assessment Programmes and Evaluation

1. Out of the total marks for each course, 20% shall be earmarked for Continuous Assessment (Internal Assessment) and the remaining 80% for the semester-end examination,
 2. Out of 20 marks for internal assessment, one test shall be conducted, preferably during the third week of third month of the semester (with a provision for re-test, if a student wishes, before the close of semester classes), and the remaining 10 marks shall be earmarked for the Skill Developmental Activities and the Record of these activities,
 3. In the case of Project Report, it (Project Report) shall be evaluated for 80 marks and the viva-voce examination shall be conducted by the Departmental Council of the College for the remaining 20 marks,
 4. The marks obtained in the tests and the skill developmental activities shall be displayed on the notice board of the College,
 5. In each of the activities pertaining to the internal assessment marks, complete transparency shall be ensured by the course teacher, and the student who is not satisfied with the marks awarded to him/her can make an appeal to the Head of the Department with justifiable reasons. On the receipt of appeal, the Head of the Department shall convene a meeting of the Departmental Council and redress the grievances of the student appropriately,
 6. In case of candidates who appear for improvement examination, and/or the students who take the examination in the failed course/s, the marks obtained in the internal assessment shall not be revised. There shall be no improvement for internal assessment, and
 7. Student-wise and Course-wise internal assessment marks shall be communicated to the Office of the Registrar (Eval) by the Principal of the College before the commencement of University examination and the University shall have access to the records of continuous assessment for verification, if necessary.
12. **Appearance for the Examination:** A candidate shall apply for all the courses of a Semester when he/she appears for the examination of that Semester for the first time.
13. **Question Paper Setting and Evaluation:** All the Courses, except Languages, of B.B.M Degree Programme shall be under the Board of Examiners in Commerce (Graduate Studies) for the purpose of examination – setting of question papers and evaluation of answer scripts.
14. **Evaluation, Revaluation and Minimum Marks for Pass**

1. Every answer script in the semester-end examination shall be subjected to coded, central and single evaluation,
2. A candidate shall be declared to have passed the examination if he/she obtains not less-than 40% marks in aggregate in each semester and 35% of the maximum marks including internal assessment marks in each course (including Project Report) provided he/she secures atleast 35% of the maximum marks in each Course in the semester-end examination. However, there shall be no minimum for internal assessment marks,
3. A candidate obtaining less-than 35% of the maximum marks and/or 35% of marks in the semester-end examination in any course shall be declared to have failed in that course. Such a candidate shall be eligible to take the examination in the failed course/s at a subsequent examination and he/she shall secure not less-than 35% of the maximum marks for pass in that course/s including 35% marks in the semester- end examination,
4. A student who desires to get his/her answer script/s revalued may do so by submitting an application along with the prescribed fee to the Registrar (Evaluation) within 15 days from the date of announcement of the result. Such answer script/s shall be got valued by another external examiner. The marks awarded to that answer script/s shall be the average of two marks. However, if the difference in the marks between the two evaluations exceeds 15%, the script shall be referred to the third internal evaluation. In this type of situation, the marks awarded to that script shall be the average of the two nearer marks out of the three evaluations,
5. However, in the case of Project Report, there shall be double evaluation – one by the concerned guide at the college level and another by one of the examiners from the panel of examiners. The chairman of BoE in Commerce (Graduate Studies) shall arrange for the second evaluation of the Project Reports in the concerned college by deputing the external examiners (i.e., the examiners from other colleges with the University jurisdiction) to the college,
6. The Principal of the College shall submit the marks list of both the examiners, after the evaluations, to the Office of the Registrar (Eval) before the completion of B.B.M – VI Semester examination. If the difference in the marks between the two evaluations exceeds 15% of the maximum marks, then such a report shall be referred to the third examiner. And in this type of situation, the marks to be awarded to the project report shall be the average of the nearer two out of three evaluations,
7. The candidate shall obtain a minimum of 35 marks in the Project Report failing which he/she shall revise and resubmit the Project Report before the commencement of the next examination. However, no candidate shall be allowed to resubmit the Project Report after three consecutive chances,

8. The result of the successful candidate at B.B.M – VI Semester examination shall be declared as NCL (not completed lower examination) if he/she has not successfully completed the lower examination, and
9. The Degree of Bachelor of Commerce shall be awarded to the candidates who have passed all the courses of Semesters – I to VI Semesters of B.B.M.

15. Promotion to Next Higher Semester

1. For admission to B.B.M – III Semester, a student shall pass atleast 40% of the Courses of B.B.M – I and II Semesters put together subject to a minimum of five courses (excluding the courses, Environmental Science and Constitution of India), and
2. For admission to B.B.M – V Semester, the student shall pass atleast 40% of the Courses of B.B.M – I to IV Semesters put together subject to a minimum of ten courses (excluding the courses, Environmental Science and Constitution of India).

16. Declaration of Result, and Announcement of Class and Ranks

1. The Degree of Bachelor of Commerce shall be awarded to the candidates who have passed all the courses of all the six semesters of B.B.M,
2. However, the Class of the Degree shall be awarded only to those students who have passed all the Courses of the last/final two Semesters (i.e., Semesters – V and VI) in the first attempt,
3. The Class of passing of B.B.M Degree programme shall be announced based on the %age of marks secured in the last/final two semesters (i.e., Semesters – V and VI) in the first attempt as follows.

%age of Marks (Semesters V and VI)	Description of Result
< 40	Fail
$\geq 40 < 50$	Pass
$\geq 50 < 60$	Second Class
$\geq 60 < 70$	First Class
≥ 70	First Class with Distinction

17. Rejection of Results

1. A candidate shall be eligible to reject the result of the whole semester-end examination within such time as may be prescribed by the University from time to time. Rejection of Course-wise result shall not be permitted. This rejection shall be exercised only once in each Semester and the rejection once exercised shall not be revoked, and
2. The candidate shall apply for rejection of results through the college of study in the prescribed Form along with the original statement of

marks by paying such fee as may be prescribed by the University from time to time.

18. **Repeal and Savings**

1. Notwithstanding anything contained in this Regulations, the Provisions of any Order, Rule or Regulations in force shall be inapplicable to the extent of their inconsistency with this Regulations,
2. The University shall issue such orders, instructions, etc and prescribe such format, procedure, etc as it may deem fit to implement the Provisions of this Regulations, and
3. If any difficulty arises in the implementation of this Regulations, the Vice-chancellor shall, in consultation with the Dean, be competent to issue necessary clarification. And he/she shall, at the earliest possible opportunity thereafter, report the action taken by him/her to the Academic Council for ratification.

SYLLABUS FOR 1st SEMESTER B.B.M

BM103 FINANCIAL ACCOUNTING-I

64 Hours

Objective: To provide basic knowledge in accounting considered essential to students pursuing advanced study in accounting and other related professional subjects

Unit-1: Meaning and Definition of accounting, Objectives of Accounting, Accounting concepts and Conventions. **6 hours**

Unit-2: Double Entry Principles, Types of Accounts, Journal and Ledger **8 Hours**

Unit-3: Subsidiary Books – Meaning and types, Problems on only purchase book, sales book and Three Columns cash book, Preparation of trial balance **8 Hours**

Unit-4: Bank Reconciliation Statement.
Meaning of Bank reconciliation statement- reasons for the differences in the two balances viz., balances as per cash and pass book preparation of bank reconciliation statement **10 Hours**

Unit-5: Final Accounts of a sole trader including manufacturing accounts (with simple adjustment) **12 Hours**

Unit-6: Final accounts of Non Trading Concerns **12 Hours**

Unit-7: Depreciation – Meaning & causes, Methods of charging Depreciation-Fixed installment - Reducing balance method. **8 Hours**

Skill Development Activities:-

1. Illustrate Dual concept $A-L=C$
2. Final accounts of a sole trader
 - (a) Correcting a wrong trial balance
 - (b) Correcting a wrong Trading & P & L Account
 - (c) Correcting a wrong balance sheet
3. Collect an accounting statement from a Bank customer & affix it.
4. Collect a copy of final accounts of a non-trading concern.
5. Collect debit note, credit note & invoices.

Books for Reference:

1. T.S Grewal-elements of Accounts
2. T.P Ghosh-Fundamentals of Accounting
3. R.L Gupta-Advanced Accountancy
4. N.K Agarwal and R.K Sharma-Fundamentals of Accounting
5. B.S Raman-Financial Accounting (volume-1)
6. S.P Jain and K.L Narang-Financial Accounting

BM104 - MANAGERIAL ECONOMICS

Objectives: To provide clear relationship between knowledge of economics application in management decision making.

- Unit-1:** Nature and Scope of Managerial Economics:- Meaning characteristics, scope and subject matter relationship with other discipline- decision making and forward planning. **10 hours**
- Unit-2:** Fundamental principles of managerial economics: - Opportunity cost principle-incremental principle, principle of time perspective, discounting principle and equi-marginal principle. **8 hours**
- Unit-3:** Demand Analysis:- Meaning and definition of demand, determinants of demand, law of demand, exception to the law of demand, elasticity of demand. **8 hours**
- Unit-4:** Demand Forecasting : - Meaning and definitions- long run and short run demand forecasting – objectives and need for demand forecasting- methods of demand forecasting –least square method problems on least square method forecasting-demand for new product- criteria of good forecasting methods. **10 hours**
- Unit-5:** Production Analysis: - Concept of production function – cost– meaning, money Cost, real Cost, opportunity cost, implicit and explicit cost, short–run costs, total cost, fixed cost, economies of scale. Revenue – meaning – total revenue, average revenue and marginal revenue- Break even analysis- break even chart with problems. **10 hours**
- Unit-6:** Pricing Theory and Pricing Methods: - Perfect competition, monopoly – monopolistic and oligopoly-meaning, definition, features, price and output determination under different marketing conditions- cost plus pricing- penetration and skimming pricing. Capital Budgeting: - Meaning, objectives, prerequisites,

components, Traditional methods to evaluate project profitability. Payback period & internal rate of return.

12 Hours

Unit 7 Interest: Meaning Ionable fund theory – Liquidity Preference theory

06 Hours

Skill Development Activities

1. Write down the Incremental principles with a numerical illustration.
2. Write a note on Least square method and its application
3. Show the Calculation of cost & revenue.
4. Mention the method of Calculation of BEP (in units & Value)
5. You are required to write Calculation of cost plus price.
6. Write the system of Calculation of project profitability

Reference books

1. Managerial economics- Sankaran
2. Managerial economics –Mehtha
3. Managerial economics-Varshney and Maheshwari
4. Managerial economics – Methane
5. Managerial economics- M.L.Jhingan and J.K Stephen
6. Managerial economics – K.D Basava
7. Managerial economics- Dr Prabhakara Shishila

BM105 - Principles & Practice of Management.

Objective: The course familiarizes the students with the principles of management, managerial practices, and recent trends in management.

Unit-1: Concept of Management: – meaning, nature, scope and importance
– Role of management, - management and administration –
Management as profession, management as science and an art.

8 Hours

Unit-2: Evolution of Management: - Taylor's scientific management –
Fayol's theory – Elton Mayo and Hawthorne experiments – different
approaches to management.

8 Hours

Unit- 3: Planning- Meaning and Significance – types of plans – different
approaches to plans – strategies, objectives and policies.

8 Hours

Unit-4: Organizing - Principles of Organization – types of organization,
formal and informal organization structure – authority and
responsibility, delegation. Span of control and chain of command.

10 Hours

Unit-5: Directing- Definition, importance- principles of direction, co-
ordination as essence of management.

8 Hours

Unit-6: Managerial Control- Needs for control,- features of effective
controlling system- modern management techniques – MBO, MBE,
TQM, MIS, PERT and CPM.

12 Hours

Unit-7: Emerging Trends in Management – concepts, definition, meaning
and objectives of strategic management, knowledge management,
stress management and event management.

10 Hours

Skill Development Activities

1. Collect the photograph and Bio-data of any three contributors to management thought.
2. Draft organizational chart and discuss the authority relationship.
3. Identify the feed back control system of an organization.
4. List out your strengths and weak nesses
5. Collect the names of BPO's and KPO's
6. Visit a factory / industry and collect information from workers about the stress and their causes.

Books for Reference:

1. Principles of management – CB Gupta
2. Principles of management – L.M Prasad
3. Principles of management – Sherlekar
4. Knowledge management – AT Raman
5. Stress management - Dr. H.L. Kowla
6. Strategic management – L M Prasad
7. Business Policy event Planning in business – Cindey lenaire.

BM106 - BUSINESS ENVIRONMENT

Objectives: It helps the students to have awareness about various local and Global Business environment.

- Unit-1:** Business and its Environment:- Meaning, Scope and characteristics of business environment: **06 Hours**
- Unit-2:** International Business and Theories: - Importance of international business – nature- reasons for international business – theories of international business – comparative cost advantage theory and Heckscher online theory. Advantages and problems of international business. **10 Hours**
- Unit-3:** Global Environment:- Meaning , definitions and features of globalization – Merits and demerits of globalization- Barriers of globalization – challenges of international business strategies for going global in India – WTO –objectives , functions, organization structure, Trading blocks- SAARC. **12 Hours**
- Unit-4:** Multinational Corporations: - Definitions- distinction between Indian companies and MNCs- Global and TNCs –factors contributed for growth of MNC's - Merits and demerits of MNC's - MNC's in India. **10 Hours**
- Unit-5:** Technological Environment: - Main features of technology, Impact, technology and society, economic effects of technology, technology and plant level changes. **10 Hours**
- Unit-6:** Economic Environment : - Features of Indian economy, factors affecting economy, economic resources, impact of LPG on Indian Business. **8 Hours**
- Unit-7:** Government Policies: Impact of fiscal, monetary and exim policies . Industrial policies on business (Latest policy measures) **8 Hours**

Skill Development Activities

1. Study the impact of economic policies on decision of any organization of your choice.
2. Analyze the elements of globalization and role of WTO
3. Globalization of Indian Business and impact or Privatization of Indian business- present case.
4. Choose any one change in any of the economic policies and show the impact or how does the change affect the business.
5. List out different trading block in international trade.
6. Give your observations as to how technology has helped society
7. List out the major MNC's in India.
8. List latest news affecting India through, world bank, IMF, WTO, ADB, etc.,. collect & paste.

Books for Reference:

1. Business Environment by Dr. K. Aswathappa.
2. Business Environment by Francis Cherunilam
3. Business Environment by S. Adikari
4. Business Development Mishra and Puri
5. Indian Economy by Rudradutt and Sundram KPM.
6. Business Environment by Chidambram K.
7. International business by Dr. P. Subbarao (Himalayan Publications)
8. Export and import management (Details of Unit-2 is given ever leaf) – By Aseem Kumar

(Excel Publications)

SYLLABUS FOR 2ND SEMESTER B.B.M

BM203 - FINANCIAL ACCOUNTING-II

Objective: To provide knowledge in accounting considered essential to students pursuing advanced study in accounting and other related professional subjects

Unit-1: Hire Purchase Accounting including default & repossession
(Excluding hire purchase trading and installment Accounts)

12 Hours

Unit-2: Company Final Accounts under vertical format (including Publishing company and hotels)

12 Hours

Unit-3: Banking Company final Accounts under vertical format

12 Hours

Unit-4: Final Accounts of General Insurance Company under vertical format- Problems on fire insurance and marine insurance only.

10 hours

Unit-5: Final accounts of Life Insurance Companies under vertical format – preparation of Revenue account and balance sheet.

10 hours

Unit-6 Human resource accounting : meaning, objectives, methods, advantages and limits (theory only)

4 hours

Unit-7 Listing of securities – norms

4 hours

Skill Development Activities:-

1. Draft a hire purchase agreement with imaginary terms and conditions
2. Visit the nearest bank and collect the accounting statements.
3. Ask the students to visit LIC branch to collect the proposal forms, medical and nomination forms.
4. Visit the nearest general insurance Company & collect different forms relating to mediclaims, fire and accident insurance.
5. Prepare the format of revenue account and balance sheet of LIC

Books for reference:

1. S.P Iyengar –Advanced Accounting
2. B.S Raman-Advanced Accounting (Volume 2&3)
3. M.C Shukhla & Grewal-Advanced Accounting
4. J.R Monga- Fundamentals of Corporate Accounting
5. S.P Jain & K.L Narang-Company Accounts

BM204 - Money & Financial System

Objective: To provide the conceptual knowledge of Indian financial market .

Unit-1: Money and Functions of money: Meaning Definitions and Functions of money- Role of money in a modern economy- supply of money- M1,M2,M3 and M4. **8 Hours.**

Unit-2: Finance-Role of finance in an economy – Role of Non- Banking financial intermediaries – Financial institutions –IFC1-IDB1- ICICI-SIDBI **8 Hours**

Unit-3: Financial Markets:
 a) Money Market:- Features-Composition of Indian Money market – recent trends – shortcomings of Indian money market.
 b) Capital Market: - Primary and secondary market – new issues market – functions of new issues market – capital market reforms – recent trends in capital market. **12 hours.**

Unit-4: Stock Exchange – meaning- distinctions between new issues market & stock exchanges – services of S/E – Listing of securities – SEBI guidelines. Investor protection – book building- buyback of shares. **10 Hours**

Unit-5: Commercial Banks – functions – creation of credit- Indian banking sector reforms – Narasimhan Committee report I &2. **10 Hours**

Unit-6: Reserve Bank of India – Functions – objectives of monetary policy credit control weapons. **10 Hours**

Unit-7: Inflation – meaning- types –causes –effects –remedies- Philips curve - inflationary gap. **6 Hours**

Skill Development Activities:-

1. Name the banks/branches in the area/ city with classification of banks.
2. Procedure for obtaining credit card, debit card, filling up of application for credit card, debit card, collection of sample of credit/debit cards.
3. Visit to ATM counter and report about its operation.
4. Name the credit control weapons used by RBI.
5. Write the format of any two money market instruments.
6. Identify and record the major findings of Narasimhan Committee report.

Books for reference:

1. Khan.M.Y – India Financial System- Theory and Practice.
2. Gupta S.B. Monetary planning of India.
3. Chander L.V. and Gold field S.M.- The Economics of money and Banking.
4. M.L. Seth –Monetary Economics
5. Mithani D.M. – Money, Banking, Trade and Finance.
6. Kurihara K.K. – Monetary theory and public policy
7. Banking Commission Report.
8. RBI- Bulletins.

BM205 - MARKETING MANAGEMENT

Objective: To Provide the students latest marketing developments & practices as well as to inculcate managerial approach to marketing problems.

Unit-1: Marketing: -Meaning and Definition – importance – Traditional and modern concepts of marketing – functions of marketing

06 Hours

Unit-2: Marketing Management : - Meaning – nature and Characteristics – Objectives and Importance – Marketing Management Process – Marketing Concepts.

08 Hours

Unit-3: Consumer Behavior:- Meaning and Definition – Characteristics – Factors influencing – Consumer Behavior – Physical & Psychological – social, cultural, personal factors.

10 Hours

Unit-4: Marketing Mix- Product: - Meaning, Definitions, Product concept, Types (Consumer and Industrial Products), Product life cycle – meaning and stages, new product planning and Development – meaning and stages.

10 Hours

Unit-5: Marketing Mix- Pricing: - Meaning – Definitions – Objectives – factors influencing pricing decisions – pricing methods.

10 Hours

Unit-6: Marketing Mix- Promotion: - Meaning – promotion mix – advertising – meaning – advantages – criticisms – personal selling – meaning – functions of a salesman – sales promotion – meaning and tools – public relations – meaning and importance.

12 Hours

Unit-7: Marketing Mix – Distribution Channels: - Meaning – Definition – types – factors influencing channel selection, Marketing Intermediaries.

8 Hours

Skill Development Activity:

1. Analyze consumer behavior for a imaginary product by interacting with a few selected consumers.
2. Draw a chart showing product life cycle of a consumer durable product.
3. Collect the data of pricing methods adopted in the concerns of your locality.
4. Develop an advertisement copy for any product of your choice.
5. List out the distribution channels available for consumer and industrial goods.
6. Collect an advertisement from any newspaper and analyze its features and suitability.

Books for Reference

1. Marketing Management by Phillip Kotler
2. Marketing Management by William J Stanton.
3. Marketing Management by Sherlekar S.A.
4. Marketing Management by B.S. Raman
5. Marketing Management by Ramaswamy

BM206 - FINANCIAL SERVICES

Objective: To provide the basic knowledge about the existing financial institutions and their services

- Unit-1:** An Overview of Financial Services- meaning- objectives and functions – characteristics – regulatory framework – scope – fund based and non-fund based activities – modern activities – need for financial services – challenges facing the financial services –sector- new financial products and services – innovative financial instruments. **12 Hours**
- Unit-2:** Merchant Banking-Definition-origin- growth of merchant banking in India- scope- merchant banks and commercial banks- Merchant banking services. **10 Hours**
- Unit-3:** Mutual Funds – meaning-classification of funds, operational and portfolio classification – open ended & close ended schemes- importance of mutual funds – mutual fund Risks- Reasons for slow growth- mutual funds in India. **10 Hours**
- Unit-4:** Lease Financing- Meaning & need – types of lease- financial lease v/s operating lease. Advantages and disadvantages, prospects of leasing – Leasing in India. **08 Hours**
- Unit-5:** Factoring Services – Meaning- definition- features-mechanism benefits of factoring – venture capital- meaning- features- forms of venture capital in India. **10 Hours**
- Unit-6:** Credit Cards- Meaning- types of credit cards- innovative cards benefits and demerits. **6 Hours**
- Unit-7:** Credit Rating- Definition and meaning- functions and benefits- limitations of credit rating- credit rating agencies in India – CRISIL **8 Hours**

Skill Development Activities

1. Collect the names of various organizations rendering merchant banking services and classify them on the basis of Banks, financial institutions and others.
2. Collect information on various Mutual funds schemes and classify them under open ended and close ended schemes.
3. Collect an advertisement copy of a Mutual fund scheme and affix it.
4. Collect an advertisement copy of a new issue made by a company.
5. Draw a diagram showing factoring mechanism.
6. Collect a specimen of a credit card- debit card – ATM card.

Books for Reference

1. Financial markets & services – Gorden & Natarajan
2. Financial services – E Dharmaraj.
3. Financial services- Guruswamy
4. Capital market & Financial services- S.K. Gupta.
5. Financial services –Nirmal Prasad and Chandra Das.

BM 207 Tourism management

Objectives: To familiarize the students with the knowledge of Tourism potential and management.

- | | | |
|----------------|--|------------------|
| Unit-1 | Introduction- The origin of Tourism, Definition, nature and importance of tourism, Types of Tourism, Growth and development of domestic and international Tourism, recent trends in Tourism industry. | 10 Hours |
| Unit-2 | Tourism as an Industry, Meaning and definition, components of Tourism industry (Tourists, Tourism product, Transportation sector, Accommodation sector, Tour operators). Significance of Tourism industry- Economic, socio-cultural, environmental, positive and negative impacts of Tourism industry. | 12 Hours. |
| Unit -3 | Planning and Development of Tourism-Meaning of Tourism planning, Need for Tourism planning, processes of Tourism planning, concept of Tourism demand and supply, factors influencing Tourism demand and supply, factors influencing Tourism development. | 12 Hours |
| Unit-4 | Tourism product and Topology-Meaning and nature of Tourism product, Tourism resources of India-Natural resources, cultural resources, Historical resources – UNESCO world Heritage sites in India. | 12 Hours |
| Unit-5 | Travel and Accommodation industry- Travel Agency- Meaning, types and functions. Tour operators – meaning, types and functions. Accommodation industry – meaning and concepts of accommodation, types and services. | 12 Hours |
| Unit 6 | Emerging Trends in Tourism
Tourism in India: Major Indian tourism destination; classical dance forms; music; fairs and festivals; problems and padolems and prospects of Indian Tourism | 6 hours |

Skill Development Activities:

1. Name the important tourist destinations of your district.
2. Visit the website and make a list of reputed tour operators in India.
3. Make a list of heritage centres in Karnataka and mention the assistance extended by UNESCO to these centres.
4. Make a record of the Hotels recognized - the Tourism Department of Karnataka.
5. Collect the tour package forms of Asian travels, Vikram travels vivek travels and other tour operators.

Books for Reference

1. Pran seth successful Tourism Management Vol. I sterling publishers pvt. Ltd New delhi- 110020
2. Krishnan K karma and mohinder chand basics of Tourism- Theory , operation and practice, Kanishka publishers, Distributors, New Delhi 110002
3. A. L Bhatia, International Tourism Management, Sterling Publishers pvt ltd., New Delhi 110020
4. Chand mahinder, Travel Agency Management: An introductory Text, Anmoll publication, Edition 2000
5. Negi, Jagmohan, Tourist Guide and Tour Operation, Kanishka publishers 2004.
6. Dr. I.C. Gupta & Dr. Sushama kasbekar, Tourism Products of India. G.A publications 8A , Vrindavan Apartments, Manishpuri, Indore, M.P
7. Indian tourism product: Robinet Jaeob, Sindhu Joseph and Philip
8. Basic of Tourism : Krishna K Kamara and Mohinder Chand

SYLLABUS FOR 3RD SEMESTER B.B.M

BM 303 - LAW AND PRACTICE OF BANKING

Objective: The purpose of this paper is to enlighten the students about the Existing banking laws and practices and update their knowledge.

Unit -1: Banker- Customer: - Definition- Debtor and Creditor relationship- Banker's Obligations to honour cheques – Secrecy- Garnishee order -rights of a banker – Lien –right of setoff – appropriation of payments- Clayton's case –law of limitation- AOD. **12 Hours**

Unit -2: Bank Accounts and Types of Customers: Savings bank account, current account, Fixed deposit account, Non resident Indian account – opening Procedure, KYC norms- Types of customers: Minor- Joint A/c -Partnership Firm - Company -Non –Trading Associations- brief explanation of legal effect and precautions to be taken by bankers. **12 Hours**

Unit – 3: Negotiable Instruments Act-1881- definitions, common characteristics of negotiable instruments, types of Negotiable Instruments: Cheques- Bills –crossing of cheques - material alteration-endorsement Types of endorsement - paying banker-collecting banker- their duties and statutory Protection. **10 Hours**

Unit – 4: Loans and Advances:- Principles of sound lending- Different types of loans and Advances – Overdraft- cash credit -term loans- Demand loans- Letter of Credit and its features **8 Hours**

Unit – 5: Customer Service in Banks:- Customer Service Guidelines-RBI instructions to customer services- Banking Ombudsman Scheme- 2006, Grievances Redressal Cell - **8 Hours**

Unit -6: Technology in Banks and Financial Innovations: History of ATM Banking – Indian scenario - Internet banking, request for information- E-commerce- Online Tax, Accounting System

(OLTAS)- Electronic A/c systems in excise and services -
Specialized services of banks : a brief explanations of New
Innovative Products & Services of Bank.

08 Hours

Unit - 7: New age clearing and latest in banking: Payment and settlement systems in banks- Credit card operations- electronic fund transfer- Electronic clearing service- MICR clearing – Core banking solutions- Autonomy package for banks.

06 Hours

Skill Development Activities:

1. Collect the Specimen forms used in banks for opening and operating different types of accounts and learn the process of filling up of those forms.
2. Collect the specimen forms of cheques and illustrate the different types of crossing, material alteration and endorsement.
3. Collect the loan application forms and learn the filling up those forms.
4. Learn the process of documentation of loan.
5. Prepare the Project Report for securing loan from bank.
6. Visit any of the public sector bank and multinational bank located in your place and write your observation in regard to the following:
 - a. Premises environment
 - b. Quality of service
 - c. Decision making process
7. Write your observations after visiting a bank regarding core banking solutions, automation in banking and learn the process of ATM operation.

Books for References:

1. Law And Practice Of Banking- B.S. Raman
2. Banking Law and Practice- S.N Maheshwari
3. Banking Theory Law and Practice- K.D Basava
4. Law and Practice of Banking- Reddy and Appannaiah
5. Introduction to Banking -G. Venkataraghavan Iyengar,
6. Law and Practice of Banking - K.C. Shekar
7. Law and Practice of Banking - P.N. Varshney
8. Law and Practice of Banking - M.L. Tannan
9. Law and Practice of Banking - Vasudevan and Radhakrishnan

BM - 304 - BUSINESS LEGISLATION

Objective: To familiarize the students with Business law and its interpretations.

- Unit-1:** Indian Contract Act of 1872- contract- classification- essentials of valid contract **14 Hours**
- Unit-2** Discharge of contract- Mode of discharge -remedies for breach of contract- quasi contractual situations **08 Hours**
- Unit-3** Contract of indemnity, guarantee, bailment and pledge. **08 Hours**
- Unit-4** Elements of Company Law 1956- meaning and features of a company- classification-Important documents- Memorandum and Articles of association distinguished, prospectus- misleading prospectus and its consequences. **08 Hours**
- Unit-5:** Consumer Protection Act 1986; object of the Act- Rights of consumer- Deficiency in service- complaint- consumer protection councils- consumer disputes, Redressal agencies. **4 Hours**
- Unit-6** The sale of goods Act 1930: Definition of goods – essentials of contract of sale- sale v/s agreement to sell – conditions and warranties- caveat emptor – unpaid seller- rights of unpaid seller – auction sale. **10 Hours**
- Unit-7:** The Indian partnership Act 1932: Definition of partnership – features- partnership v/s HUF- Types of partners- Position of minors in partnership –mutual rights and duties- implied authority of a partner – registration and consequences of non-registration- dissolution of firms- mode of dissolution **12 Hours**

Skill Development Activities

1. Write down the fact and underline the legal points involved in the following cases.
 - a. Carlil and Carbolic smoke ball company, b. Lalman Shukla V/S Gowridutt, c. Mohribibi V/s Dharmadas Ghose, d. Abdul Aziz V/s Masum Ali, e. Rangnayakamma V/s Alwar shetty
2. Collect a judgment copy on damages awarded by the court for breach of contract
3. Record the rights and duties of bailee like a tailor b. Mechanic, C. Goldsmith.
4. Drafting /Collect and filling up the following: - a. Affidavit, b. Vakalat form, c. Power of Attorney d. Gift deed e. Pledge.
5. Visit a consumer court and record the nature of consumer disputes referred for redressal .
6. Collect a specimen copy of M/A and A/A of a company.

Books for Reference:

1. Business Law-S.S.Gulshan
2. Business Regulatory Framework- K.C. Garge, V.K. Sareen Mukhesh Sharma, Chawla.
3. Business and corporate laws- P.S. Gogana
4. Commercial Law- N. D. Kapoor.
5. Business Regulatory Framework- Saravanavel, S.Sumathi
6. The Right to Information Act-2005- P.K. Das.

BM 305 - COMPUTER APPLICATION IN BUSINESS

Objective: To enable the students to learn the fundamentals of computer and its applications to Business.

Unit-1: Computer Concepts: Application of computer in Business and office environment and other areas. Evolution of computers – history- generation. Classification of computers: digital, analog , hybrid, mini, micro, mainframe , super computers: Personal computers: palm PCs/ Computer, Laptop PCs and Desk Top PCs.

8 Hours

Unit-2: Computer Hardware and Software: Definitions of computer system, hardware and software. Types of Software: System Software and Application Software. Operating System; meaning, functions and types- MS- DOS and Windows.

6 Hours

Unit-3: MS-Word: Features, advantages, Basic operations: word opening screen Elements, Creating, Opening and saving of word document. Formatting , Margin, Paper selection, Undo- Redo, Spell Check, alignment, insert Table. Mail merge, MS-Word Shortcut keys.

12 Hours

Unit-4: MS-Excel:- Features, advantages, MS-excel Program Window elements, Managing workbooks –Create, Open, Save and Close. Managing worksheets: Naming, Inserting, Moving, Coping and deleting. Navigation in MS-Excel. Standard Toolbar Elements. Types of cell data, entering data, inserting and deleting cells. Rows and columns. Formatting Toolbar Elements. Basic Formulas. Types of cell referencing. Practicals in MS- Excel sheets.

16 Hours

Unit-5 Tally (9.0): Features, Advantages, Menus in tally, create a company, Ledger Creation, Making voucher Entries and Creating Inventory of products with different VAT rates.

08 Hours

Unit-6 Management Information System: Meaning and definition of MIS, characteristics of MIS, objectives of MIS, limitations of MIS, Database: Meaning, Types of database, need of Relational database, Data Normalization (Determining tables, determining fields, Determining Relationships) Integrity Rules (Primary/ Foreign key, one to many, many to many , one to one) **10 Hours**

Unit-7 Cyber laws and information technology Act: objects- computer crimes, penalties and adjudication **4 Hours**

Skill Development Activities:

1. MS-WORD: Letter writing and mail-merge Practical
2. MS- Excel: Creating worksheet, data entry, use of formulas, graph generations.
3. Preparation of mark statement, sales Report, Salary statement.
4. Show the steps you follow in creating a company in tally.
5. Show the steps for creating inventory of products assigning Groups, Category and Item names with different VAT rates.

Books for reference:

1. Computer for Business- P. Parameshwaran
2. Computer Today – K. Basandra
3. MS-EXCEL, MS-WORD- BPB Publications.
4. Computers for beginners - Balaguruswamy
5. Accounting with Tally version 7.2

BM 306 - BUSINESS TAXATION -I

Objectives: To Familiarize the students with the basic legal provisions and procedural aspects of income tax.

Unit-1:	Income Tax Act: Basic concepts – income, agricultural income, casual income assessee, assessment year, previous year, person, gross total income, total income.	8 Hours
Unit-2:	Residential Status of individual and incidence of tax theory and problems	12 Hours
Unit-3:	Tax-free Incomes	02 Hours
Unit-4:	Heads of Income – all heads to be mentioned – theory and problems on salary head, including retirement	24 Hours
Unit-5:	Deductions from Gross total income u/s 80 relating to individuals and HUF u/s 80C, 80CCC, 80CCD, 80CCE, 80D, 80DD, 80DDB, 80E, 80G, 80U (with problems)	12 Hours
Unit-6:	Income Tax Authorities in India – appointment of income tax authorities and their powers.	4 Hours
Unit-7:	Assessment Procedure- filing of returns, types of returns, types of assessment.	4 Hours.

Skill Development Activities

1. Collection of salary certificate of an employee of any organization.
2. PAN- filling of form 49-A
3. Filling of Form No. 16, 16A
4. Filling of challan and making payment of tax.
5. Income tax Clearance certificate for the purchase and sale of immovable property.
6. List out a few non-residential Indians, firms and companies in your town / locality.
7. Prepare Perquisites chart.(RFA and Motor car)
8. Draw an organizational chart of IT authorities.

Books For Reference

1. Direct taxes – H.C. Mehrotra
2. Direct taxes – Singhanian
3. Direct taxes – B.B.Lal
4. Income tax law and accounts – Mehrotra
5. Law and practice of income tax- Bhaghavathi Prasad
6. Law and practice of income tax- Gaur and Narang
7. Income tax law and practice – M. B. Kadkol.

SYLLABUS FOR 4th SEMESTER B.B.M

BM 403 - HUMAN RESOURCE MANAGEMENT

Objectives: The objective of the course is to help the students to the various aspects of human resource development strategies for better management of people in the organizations.

- Unit-1:** Introduction to Human Resource Management: - Meaning and definitions, objectives and importance of HRM, functions of HRM– managerial functions – operative functions – nature and scope of HRM – HR manager. Role, qualification and qualities. **10 Hours**
- Unit-2:** Human Resource Planning : - Objectives – need and importance of job analysis, – job description – job specification – purposes and uses of job analysis, job rotation and enrichment. **8 Hours**
- Unit -3:** Recruitment and Selection - Meaning – sources of recruitment – internal and external sources – campus recruitment – steps in selection process – tests and interviews – types – group discussion – placement and induction **10 Hours**
- Unit -4:** Employee Training: - Need and importance – types and method of employee training – executive development programme- need and techniques - on the job and off the job- methods. **10 Hours**
- Unit-5:** Promotion and Transfers: - Meaning of promotion-Purposes and types – promotion policy – bases of promotion – seniority v/s merit – transfer, need –purposes –types of transfers- demotion –causes of demotion. **10 Hours**
- Unit-6:** Work Environment: - Meaning – physical – mental and social environment – fatigue – meaning – monotony and boredom – causes- methods of reducing fatigue. **8 Hours**
- Unit-7:** HRM Strategies - Human capital – emotional quotient –mentoring – 360-degree appraisal –TQM – KAIZON. **8 Hours**

Skill Development Activities

1. Collect an advertisement copy for business executive's vacancy from a newspaper and prepare an application form accordingly.
2. Collect information about new recruitment sources.
3. Prepare a chart for job description and job specification.
4. Conduct an I.Q test for students and ask them to record it.
5. Collect information about training method used in a company to train workers and managers.
6. Conduct group discussion in the classroom on leadership skills.
7. Conduct a mock interview in the classroom.

Books For Reference:

1. Human Resource Management - P. Subba Rao
2. Human Resource Management – C.B.Gupta
3. Human Resource Management-S.S.Kanka
4. Personnel Management- C.B.Mencoria
5. Personnel Management and industrial relations-Edwin Flippo
6. Personnel Management and industrial relations-Dale Yoder
7. Personnel Management and industrial relations-P.C.Tripathi

BM 404 - BUSINESS MATHEMATICS

Objective: To enable the students to understand and apply mathematical techniques to practical business problems.

- Unit-1:** Indices -Meaning, laws, and their application for simplification
Logarithms- uses of log tables for multiplication, division, rising the power and roots of number. **10 Hours**
- Unit-2:** Business Finance
Problem on simple Interest, Compound Interest, Annuity, Present values, discounting of bills- TD, BD, BG, Future Value and present value Ratios- Propositions and variations – problems relating to speed, time, distance and work completion. **10 Hours**
- Unit-3:** Matrices and Determinants-Types of matrices- operations- addition, subtraction, multiplication, transpose, and inverse matrices - Determinants – Cramm's Rule with 2 & 3 unknowns- application of matrices to solve business problems. **10Hours**
- Unit-4:** Theory of Equations Linear equations, quadratic equation. Solution to linear and Quadratic equations - Elimination, Cross-multiplication, Substitution, Sridharacharya's formulae methods and factorization. **12Hours**
- Unit-5:** Progression A.P, G.P - Sum to n terms of A.P and G.P - A.M, and G.M. **10Hours**
- Unit-6:** Permutation and Combination – Simple problems on nPr, nCr - Binomial Theorem. **04Hours**
- Unit-7:** Measurement of Solids and volumes, measurements Rectangle of areas, Square, parallelogram, triangle, circle, sectors, measure of volume prism, cylinder, cones and pyramids. **08 Hours**

Skill Development Activities

1. Visit Bank or Co-operative society and collect information about how they calculate interest on RD, SB account, FD, Overdraft, and term loan.
2. Collect information about any subject like share value/ dividend, population etc for last five period and predict for next five years.
3. Contact any contractor and collect information how he measures the different shaped construction and estimate the cost.
4. Visit insurance company, study and analyze how they will calculate the premium on different policies – calculation of surrender value.
5. Collect information from corporate about how they made use of matrices.
6. Collect information from an Industry (Small-Scale) about the wage structure and analyze.
7. Conduct a survey on any subject and represent by VENN Diagram.

Books For Reference:

1. Business Mathematics – Sanchethi & Kapoor
2. Business Mathematics – S.P. Gupta
3. Business Mathematics – Madappa, Sridhara Rao
4. Business Mathematics – Dorairaj S.N.
5. Business Mathematics – B.H. Suresh
6. Business Mathematics – Sanchethi & Agarwal
7. Business Mathematics – V.K. Kapoor
8. Business Mathematics – Wilson
9. Business Mathematics – Oak and Others
10. Commercial Arithmetics - Aggarwal

BM405 INSURANCE MANAGEMENT

Objectives: To enable the student to understand the principles & Procedure pertaining to different kinds of Insurance Business.

UNIT -1: Concept of Risk Definition- Concept of Risk, Nature of Risk, Management of Risks. Features – Objectives, Identification, Methods of Handling Risk, Prevention of Risk. Risk Management information systems.

08 Hours

UNIT-2: Origin, Evolution and Meaning of Insurance History of insurance, Rights and responsibilities of insurer and the insured, classification of insurance, role of insurance in the financial system, importance of insurance to Business industries and society – Risk and Insurance.

08 Hours

UNIT-3: Contract of Insurance Essentials of valid insurance contract, Principles of Insurance – utmost good faith, insurable interest, proximate cause, and principles of indemnity, subrogation and contribution. Consequences of ignoring these principles.

10 Hours

UNIT-4: Classification of Insurance

- i. Life and Non-Life, Basics of Life insurance, Types of Life insurance policies, Types of claims and their settlement procedure- documents.
- ii. Non life Insurance: Marine insurance, types of risk covered by Marine Policy, Essentials of Marine insurance contracts, Kinds of Marine insurance policy, Clauses in Marine insurance policy- claims settlement procedure.
- iii. Fire and Motor Insurance: Definition of fire insurance, essentials of fire insurance contract, risk covered by Fire insurance policy, kinds of Fire insurance policy, Motor insurance, claims settlement procedure.
- iv. Miscellaneous Insurance :Property insurance, liability insurance, social insurance and rural insurance

12 Hours

UNIT-5: Types of Insurance Organizations

- i. Life Insurance Corporation of India- Objectives- Achievements of LIC.
- ii. General Insurance Corporation of India- Objectives- Achievements of GIC.
- iii. LLOYDS Corporation- Features and Objectives of LLOYDS Corporation.

10Hours

UNIT-6: Indian Insurance : globalization of Insurance, Regulations of Insurance Business in India Reforms in the Indian insurance sector –IRDA – major players of Indian insurance sector.

08 Hours

UNIT-7: Marketing of insurance products- factors contributing for critical success factor for insurance player, distribution channels, Traditional- new distribution channels, bank assurance

08 Hours

Skill Development Activities:

1. Collect the Specimen of the following forms and learn the process of filling up those forms.
 - a. Proposal form : Life insurance, vehicle insurance, Property insurance.
2. Collect the insurance claim for life and general insurance and mediclaim form
3. Collect the insurance policy document and identify the important contents.
4. Collect the branches of innovative insurance products by different insurance organizations.
5. Illustrate the equity linked insurance products.

Books for reference

1. Principles of Insurance Management - Neelam C. Gulati, Excel books.
2. Insurance and Risk Management - P.K. Gupta, Himalaya Publishing House.
3. Legal aspects of insurance, - P.K. Gupta, Himalaya Publishing House.
4. Principles and practice of Insurance- M.N.Misra.
5. Principles and practice of Insurance-G.S. Panda.
6. Insurance in India- P.S. Palande, R.S. Shaw, M.L. Lunawat.
7. Principles and Practice of Insurance- Dr. P. Periaswamy

BM406 BUSINESS TAXATION –II

Objective: To enable the students to grasp the practical aspects of income tax.

Unit-1	Income from House Property: Basis of charge – determination of annual value a) Self occupied b) let out – Deductions from annual value – Unrealized rent – Problems on income from house property.	10 Hours
Unit-2	Income from Business and Profession – individuals (Theory and problems)	16 Hours
Unit-3	Capital Gains – Meaning of capital assets – transfer, exempted capital gains, computation of income from capital gains with exemption u/s 54 and 54F only.	08 Hours
Unit-4	Income from other sources (Theory and problems)	08 Hours
Unit-5	Set off and carry forward of losses - (Theory and problems)	06 Hours
Unit-6	Computation of Total Income and Tax Liability of individual with Agriculture income (excluding computation of salary) along with deduction under 80C 80D 80DD and 80G	10 Hours
Unit-7	Tax Planning – Meaning – distinctions between tax evasion and tax avoidance, tax planning in relation to Residential status incidence of tax, salary, house property, profits and gains of business and profession, capital gains & other sources.	06Hours

Skill Development Activities

1. Identify the transactions not regarded as transfer for capital gains purpose.
2. Prepare a brief report relating to amendment made in the current finance act relating to Income tax act.
3. Different kinds of forms to be used for filling the returns.
4. Make a list of item taxable under the head income from other sources.
5. Filling of income tax returns of individuals.
6. Due date for filling returns of all assesees.

Books for Reference:

1. Income Tax Law and Accounts – Mehrotra and Goyal
2. Income Tax Law and Accounts – Gaur and Narang
3. Income Tax Law and Accounts- Bhagavathi Prasad
4. Direct taxes - Singhania
5. Direct taxes - B. B. Lal.

SYLLABUS FOR 5th SEMESTER B.B.M

BM501 COST ACCOUNTING

- Objective:** To enable the students to grasp the fundamentals of cost accounting and the Tools used in cost accounting.
- UNIT 1:** Meaning and Definition of Cost, costing, cost accounting and cost accountancy -Objectives and functions of cost accounting- advantages of costing -differences between cost accounting and financial accounting- methods of costing (only theory) .
6 Hours
- UNIT 2:** Cost Ascertainment: COST CENTER and COST UNIT. Elements of cost Classification of cost-components of total cost. Computation of total cost through cost sheet. Single or output costing- preparation of cost sheets, tenders, quotations, estimates
12 Hours
- UNIT 3:** Material-Meaning and Definition. Material control concept and techniques. Purchase department- functions of purchase department- centralized and decentralized purchase system stores organization- functions-centralized and decentralized system. Inventory control- stock levels. Pricing of material issues- problems on FIFO and LIFO methods.
10 Hours
- UNIT 4:** Labor- Meaning and Definition. Control of labor, time keeping and time: booking departments- methods of remuneration – based on time rates and piece rates system and incentive scheme - Halsey and Rowan plans only. Problems on time rate, piece rate Halsey and Rowan plans, preparation of labor cost sheet.
12 Hours
- UNIT 5:** Overheads –Meaning and Definition, Classification of overhead. Calculation of Machine Hour Rate (Simple Problems relating to single Machine).
8 Hours
- UNIT 6:** Method of Costing- process costing (excluding joint products joint costs, interposes profits and equivalent units) contract costing – Simple problems (including estimated contract account).
16 Hours

Skill Development Activities

1. Name the appropriate method of costing for each of the following-

a. Printing press	b. Sugar factory	c. Cinema theater
d. Hospital	e. Paper mill	f. KSRTC
g. Oil Refinery	h. Rice Mill	
2. Write down the specimen format and a note on the following-

a. Bin Card	b. Stores Ledger
c. Pay Roll	d. Labor Cost Sheet
3. Visit the factory and write the report on any two of the following-

a. Costing department	b. Production department.
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4. Classification of Over Head- Basis of apportionment of overhead and listing of overheads on the basis of variability.
5. Listing of Industries where process costing is adopted and listing of industries Where single or output costing is adopted.

Books for Reference

1. Cost Accounting – S.P. Iyangor
2. Cost Accounting – B.K.Bhar
3. Cost Accounting - Nigam and Sharma
4. Cost Accounting – B.S.Raman
5. Cost Accounting – Jain and Narang

BM502 STATISTICS FOR MANAGEMENT- I

Objective: To familiarize the students with the fundamental statistical tools for business decisions.

- Unit-1:** Meaning and Definitions of Statistics
Functions and scope of business statistics, features and limitations of statistics, distrust of statistics.
06 Hours
- Unit-2:** Statistical Enquiry
Meaning and stages of statistical enquiries, sources of data, methods of collecting primary and secondary data- Classification and Tabulation – problems on frequency distribution including byvariate frequency distribution.
8 Hours
- Unit-3** Tabulation – Meaning, Rules & parts of Statistical tables – problems.
04 Hours
- Unit-4:** Measures of Central Tendency
Meaning, objectives- features of an ideal average – types of an average – limitations of an average – computation of simple arithmetic mean, median, quartiles, mode, including bi-modal series, Geometric mean, Harmonic mean for individual observation only.
12 Hours
- Unit-5:** Measures of Dispersion
Meaning, absolute and relative measures of dispersion – types – range – quartile deviation Standard deviation, Co- efficient of each method co efficient of correlation (excluding combined and correlated standard deviation)
12 Hours
- Unit-6:** Skewness
Meaning – types of skewness, absolute and relative measures of skewness, methods – karl pearson's co-efficient of skewness, Bowley's co-efficient of skewness,
12 Hours
- Unit – 7** Diagramatic and Graphic representation – meaning and uses – types of diagrams- Simple, Subdivided, Multiple, Percentage, Pie, diagrams, Rectangles, Graphs of frequency distribution – Histogram, Location of mode, Ogive curves, location of median and quartiles, frequency polygon.
10 Hours

SKILL DEVELOPMENT ACTIVITIES

1. Select any consumer durable product of your own choice and prepare a questionnaire to elicit consumer response.
2. Prepare a bivariate table for the marks of any two subjects of your class students.
3. Find the consistency of any two cricket batsmen taking the runs scored by them in ten international matches.
4. Drawing of Histogram and graphic location of mode
5. Drawing of ogive curve and graphic reading of median & Quartiles.
6. Narrate the points of differences between Symmetrical & skewed distribution.

Books for Reference

1. Statistics for Management – Levin Rand Rubin D.S
2. Business Statistics – S.C. Gupta
3. Business Statistics – Ellahance
4. Business Statistics – Chikodi & Satyaprasad

BM 503- ENTREPRENEURSHIP DEVELOPMENT

Objective: To familiarize the students to understand the concept of entrepreneurship skill and development.

- Unit-1: Entrepreneurship:**
Objectives Introduction to Entrepreneur, Entrepreneurship and Enterprise- Importance and relevance of the entrepreneur- Factors influencing entrepreneurship- pros and Cons of being an entrepreneur
10 Hours
- Unit 2: Women entrepreneurs:** problems and promotion – Types of Entrepreneurs- Characteristics of a successful entrepreneur – competency requirement for entrepreneurs – Awareness of self competency and development.
06 Hours
- Unit-3 Rural Entrepreneurship:** meaning- need for rural entrepreneurship- problems – how to develop rural entrepreneurship – rural entrepreneurship and non governmental organizations.
10 Hours
- Unit-4 Small Scale Enterprises:**
Small scale enterprises/Tiny industries/ Ancillary industries/ cottage industries – definition, meaning, product range, capital investment, ownership patterns- Importance and role played by SSE in the development of the Indian economy – problems faced by SSE's
10 Hours
- Unit-5 Sickness in SSE's-** meaning and definition of a sick industry-causes of industrial sickness- preventive and remedial measures .
06 Hours
- Unit-6 Institutional Assistance to Small Scale Enterprises**
Financial assistance through SFC; SIDBI, commercial banks, KSIDC, KSSIC, IFCI,-Non financial assistance from DIC,DIDI, EDI, SIDO, AWAKE,TCO, TECKSOK, KVIC- Financial incentives for SSI's and tax concessions - Assistance for obtaining raw material, machinery, land and building and technical assistance – Industrial estates – role and types.
12Hours
- Unit-7** Small entrepreneur in international business with case studies.
10 Hours

Skill Development:

- Prepare a project report to start an SSI unit.
- Draft a letter to the concerned authority for seeking license to start an SSI unit.
- Prepare a format of Business plan
- A report on the survey of SSI units located in the region.
- Financial assistance chart for SSI units.
- Any one success story of Entrepreneur of the region.
- List tax concessions available to SSI units under direct and indirect taxes.

Books for Reference

1. Udai Pareek and T.V. Rao Developing Entrepreneurship
2. S.V.S. Sharma Developing Entrepreneurship Issues and problems,.
3. Srinivasa, A practical Guide to industrial Entrepreneurs
4. Government of India, Report of the committee on Development of Small and medium Entrepreneurs, 1975
5. Bharusali, m Entrepreneurs Developmet
6. Vasanth Desai, Management of Small scale Industry
7. Vasanth Desai, Problems and Prospects of small scale Industry
8. CSV Murthy, Entrepreneurial Development
9. Entrepreneurial Development Dr. Anil Kumar, S.C. Poornima K. Abraham, Jayshree. K
10. Aruna Kaulgud, Entrepreneurship Management.

BM504 Quantitative Techniques

Objective: To familiarize the students to understand and application of mathematical techniques to practical business problems.

Unit-1: Games & Strategies Introduction to games- two person – Zero-sum game- Game with saddle point, maximin & Minimax Principle, game without saddle point, Pure and Mixed strategies.

8 Hours

Unit-2: Transportation Models

Introduction- various methods for solving transportation problem
Finding Initial Basic Feasible Solution - Degeneracy - Duality in
Transportation problem- Loops in Transportation - Test for
optimality (only stepping stone method).

10 Hours

Unit-3: Assignment Models

Introduction- Reduction Theorem Rules- Hungarian Approach
Method- Typical assignment problems- Traveling Salesman
Problem.

10 Hours

Unit-4: Decision Analysis

Introduction – Uncertainty and Risk - Decision under uncertainty -
Decision under risk- Decision Tree Analysis

8 Hours

Unit-5: Simulation

Introduction- Methodology of Simulation- simulation models-
generation of random numbers – Monte-Carlo Simulation-
Simulation of Inventory problems- Simulation of queuing system-
Simulation of investment & budgeting- Simulation of Maintenance
problems - advantages and limitations.

8 Hours

Unit-6: Probability

Uncertainty and Probability – sample space & Probability-
conditional Probability- some Probability distributions – Binomial
distribution, Normal distribution, Poisson distribution.

12 Hours

Unit-7: Differential calculus – Differentiation of linear, functions, higher
order derivation, finding maximal and minimal of a function
(simple problems)

08 Hours

Skill Development Activities:

1. Collect the information about the transport system adapted by any industry or Transport and analyze.
2. Plan the tour program for a traveling salesman to cover a district by having office at district head quarters to minimize the traveling cost.
3. Collect information about assignment of work to the laborer by a contractor and analyze.
4. Visit a Fuel station and record the service pattern and suggest the best system using simulation.
5. Prepare a Decision Tree and Analyze (Refer textbook for data).

Books For Reference:

1. Quantitative Techniques in Management – M.B. Vohra
2. Linear Programming by Loombpaul
3. Operations Research – Kanthi Swaroop, V.K. Gupta & Manmohan
4. Quantitative Techniques – V.K. Kapoor
5. Quantitative Techniques – Ananda Sharma
6. Quantitative Techniques in Management – S. Jaishankar.

BM505 Business Research Methods

Objective: To provide clear idea about research methods and to know how to conduct research.

- | | |
|---------------|--|
| Unit-1 | <p>Research Methodology – Introduction Meaning of research, objectives of research, significance of research, types of research, scientific methods and the research process, steps in the research process.</p> <p style="text-align: right;">8Hours</p> |
| Unit-2 | <p>Research Design and Sampling Procedures
Meaning of research design, Need for research design, Features of a good design.</p> <p style="text-align: right;">6Hours</p> |
| Unit-3 | <p>Sampling
Meaning and need, objectives of sampling, sampling process, census v/s sampling. Non- Sampling errors, Sampling errors, sampling methods; Non probability methods, probability methods. (theory only)</p> <p style="text-align: right;">8 Hours</p> |
| Unit-4 | <p>Data Collection and Processing:
Sources of data; primary data and secondary data, methods of collecting primary data; observation method, interview method, questionnaire; structured & unstructured questionnaires, Difference between questionnaires & Schedules, Questionnaire construction procedure, sources of secondary data, qualitative techniques of data collection.</p> <p style="text-align: right;">12 Hours</p> |
| Unit-5 | <p>Processing of Data - Meaning, Raw data, Editing, Coding, Tabulation, summary of data. (theory only) Data Presentation
Diagrammatic and graphic representation – meaning and uses, Types of diagrams- simple, sub- divided , multiple, percentage bars and rectangles.</p> <p style="text-align: right;">12 Hours</p> |
| Unit-6 | <p>Hypothesis Testing
Meaning of hypothesis, formulating of hypothesis, types of hypothesis , procedure for hypothesis testing Simple problems on hypothesis testing on Z squares.</p> <p style="text-align: right;">10 Hours.</p> |
| Unit-7 | <p>Preparation of the Research Report
Role of report, types of report, contents of the report, principles of report, writing, different steps in writing report, mechanics of writing a research report</p> <p style="text-align: right;">8Hours</p> |

Skill Development Activities

1. Illustrate different types of samples with examples
2. Construction of a questionnaire for collection of primary data keeping in mind the topic chosen for research.
3. Narrate your experience using observation technique
4. Diagrammatically present the information collected through the questionnaire
5. Preparation of research report.

Books For Reference

1. Marketing research, principles, applications and cases- Dr. D.D. sharma, Sultan chand and sons
2. Modern Marketing research”, Mishra M. N, Himalaya publishing house.
3. Research Methodology methods and techniques- Kothari C. R, Wishwa prakashan.
4. Research methodology in social sciences – Prof. O. R. Krishna swamy, Himalaya publishing house
5. Research methodology – P.C. Tripathi
6. Research Methodology in management – Tanulingam.

SYLLABUS FOR 6th SEMESTER B.B.M

BM601 MANAGEMENT ACCOUNTING

Objective: To enable the students to grasp the fundamentals of management accounting and the tools and techniques used in management accounting.

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|---------------|--|-----------------|
| Unit-1 | <p>Management Accounting
 Definition- meaning- nature- functions- uses & limitations of management accounting- Difference between management accounting and financial accounting – differences between management accounting and cost accounting</p> | 8 Hours |
| Unit-2 | <p>Financial Statement Analysis
 Meaning and types of financial statement analysis (internal, external, horizontal and vertical)
 Technique of financial statement analysis – comparative statements, common size statements and trend analysis and problems thereon.</p> | 8 Hours |
| Unit-3 | <p>Ratio Analysis
 Meaning, significance and limitations of ratios computations of ratios.
 1. Liquidity ratios: Current ratios, liquid ratio, and debt equity ratio
 2. Turnover ratios: inventory turnover ratio, debtors turnover ratio, average receivable period, creditors turnover ratio and average payment period.
 3. profitability ratios : Gross profit ratio, Operating ratio, Operating profit ratio, net profit ratio and return on capital employed ratio.</p> | 12 Hours |
| Unit-4 | <p>Fund Flow Statement
 Meaning of fund- flow of fund and fund flow statement. Managerial uses and limitations of fund flow statement. Preparation of fund flow statement and problems thereon.</p> | 10 Hours |
| Unit-5 | <p>Cash Flow Statement
 Meaning, uses and limitations of cash flow statement. Distinctions between cash flow statement and fund flow statement. (Theory only)</p> | 4 Hours |
| Unit-6 | <p>Budgetary Control
 Meaning of budget, budgeting and budgetary control. Significance , limitations and classification of budgets. Preparation of flexible and sales budgets and problems thereon.</p> | 12 Hours |
| Unit-7 | <p>Marginal Costing in Managerial Decision Making :
 Meaning and significance of marginal costing –BEP, PV ratio, margin of safety (simple problems thereon)</p> | 10Hours |

Skill Development Activities:

1. Collect the financial statements of a company for 2 years and prepare comparative income statement and comparative balance sheet.
2. Compute the following ratios from the collected financial statements of a co:-
 Liquid ratio, debtor turnover ratio, creditors turnover ratio, return on capital employed and debt equity ratio and give your comments.
3. Using the collected financial statements, prepare a fund flow statements.
4. Prepare a cash flow statement from the collected financial statements.
5. Prepare a production budget with imaginary figures.
6. Based on the information given, suggest the management to make / buy a part or accept/ reject an export order.

Books For Reference:-

- | | |
|----------------------|--|
| 1. Khan and jain | - Management Accounting (Tata McGraw Hill) |
| 2. Sharma & Gupta | - Management Accounting (Kalayani) |
| 3. J. Madegowda | - Management Accounting (Himalaya) |
| 4. S.P. Gupta | - Management Accounting (Sahitya Bhavan) |
| 5. Pillai & Bagavati | - Management Accounting (S. Chand & Co) |
| 6. Jain & Narang | - cost Accounting (Kalyani Publications) |

BM602 STATISTICS FOR MANAGEMENT-II

OBJECTIVES : To enable the students to grasp the practical application of statistical tool for the management

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|-----------------|--|-----------------|
| Unit-1: | Correlation Analysis: Meaning and Methods of studying correlation –degree of correlation –karl pearsons co-efficient of correlation- probable error -simple and bi-variate tables | 12 Hours |
| Unit -2: | Regression Analysis –Meaning, Difference between correlation and regression –regression equations –estimation of regression co-efficients through regression equations – simple and bi-variate tables. | 12 Hours |
| Unit-3: | Index Number; Meaning and Purpose of index number - limitation -steps in the construction of index number- types. Un-weighted- simple aggregate index number- simple price relative method -weighted index number-Laspeyer's, Paasches, Dorbish and Bowley's and fishers ideal index-number-TRT and FRT-cost of living index number, methods- aggregate expenditure method and family budget method. | 12 Hours |
| Unit-4: | Statistical Quality Control : Meaning and objectives- types of control –control charts and their uses- types of control charts construction of mean and range charts. | 6 Hours |
| Unit-5: | Interpolation and Extrapolation –Meaning –Utility, Algebric methods – Binomial and Newton's method only. | 8 Hours |
| Unit-6: | Chi-square Test: Meaning –Definition and Nature assumption – Degree of freedom – Form of Chi –square distribution, chi – square test or goodness for fit for independence of attributes Yates Correction. | 10Hours |
| Unit-7: | Association of Attributes – Yule's method only. | 4 Hours |

Skill Development Activities.

1. Ascertaining correlation between any two quantitative variables like height and weight of 10 students of your class.
2. Estimation of probable values like sales, marks, income etc through regression equations.
3. Using imaginary values of sample means (\bar{x}) and range charts and comment on the state of control of the process.
4. Using imaginary figures construct the cost of living index of your own place.
5. Point out the differences between correlation and association of attributes.

Books For Reference

1. Statistics for Management – Levin Rand Rubin D.S
2. Business Statistics – S.C. Gupta
3. Business Statistics – Ellahance
4. Business Statistics – Chikodi & Satyaprasad

BM603 FINANCIAL MANAGEMENT

Objective: To acquaint the students with the basic concepts of management of business finance

- Unit-1** Financial Management:- An Overview:
Meaning and Definitions of financial management. Scope of Financial Management- Traditional approach and modern approach. Types of Financial Decisions and functions of a Finance manager. Objectives or Goals of Financial Management – Profit v/s Wealth Maximization.
Time value of Money – Meaning and importance of time value of money (Theory only) **12 Hours**
- Unit-2** Financial Sources – Short term, medium term and long term sources of finance. **6 Hours**
- Unit-3** Leverage Analysis: Meaning and definition of leverage. Financial leverage – meaning and effect on shareholders return. EBIT –EPS analysis. Simple problems thereon. **8 Hours**
- Unit-4** Cost of Capital – Concept and Computation:
Meaning and definition cost of capital. Concepts- Opportunity cost, specific cost, Explicit cost, Implicit cost and weighted average cost of capital (WACC). Problems on computation of specific costs like – cost of debt/ debentures, Cost of preference shares, cost of equity shares and retained earnings. Problems on computation of weighted Average cost of Overall capital using book value weights, Marginal weights and Market value weights. **14 Hours**
- Unit-5** Capital Budgeting Decisions – Investment Appraisal Techniques:
Nature and significance of capital budgeting. Types of capital budgeting decisions. Cash flows v/s Accounting profit. Cash flow estimates and determinations of cash flows. Investment appraisal techniques – Traditional techniques (Payback period and ARR), Discounted cash flow techniques (NPV method, IRR method and profitability Index). Simple problems on PBP, ARR, NPV, IRR & PI to be solved. **12 Hours**
- Unit-6** Working Capital Management:
Sources of working capital. Advantages of sufficient working capital, disadvantages of shortage and excess working capital. Estimation of working capital – Operating cycle method and current assets and current liabilities method and problems thereon. **6 Hours**
- Unit-7** Dividend Decisions – Policy and Models:
Dividend and its various forms. Dividend Policy – meaning and types dividend policies. Essentials of a sound dividend policy .Factors influencing the dividend policy. Walters model, Gordon's Model and problems thereon to be solved. **6 Hours**

Skill Development Activities

1. Visit an Organization and contact financial manager and collect information about his functions, duties and responsibilities.
2. Visit an Organization and collect information about its capital structure (Equity, Debt etc.) and analyse.
3. Visit an Organisation and collect information about their investment decisions.
4. Visit an organization and collect information about the sources of its working capital.
5. Collect the published annual financial statements of a company and analyse its capital structure and compute its overall cost of capital.

Books for Reference:

1. Khan M.Y & Jain P.K – Financial Management , text, Problems and cases, Tata McGraw- Hill publishing Company Limited , New delhi.
2. Dr. Gupta S. P. Financial Management Sahitya bhavan publications, Agra
2. Shashi K. Gupta
and sharma Financial Management, Kalyani publishers, Ludhiyana
4. Prasanna Chandra Financial Management, Theory & practice. Tata McGraw- Hill
5. I.M. Pandey Financial Management, Vikas publications, New Delhi

BM604 ORGANISATIONAL BEHAVIOUR

Objective: To enable the students to understand human behavior and organizational behavior.

- Unit-1:** Introduction to Organizational Behavior
Meaning- Definition – Nature and scope of OB- Need for study – contributing disciplines to OB models of OB – challenges and opportunities for OB
08 Hours
- Unit-2:** Organization Structure
Meaning- Need and element s- forms of organization structure – organization goals – nature of goals – Determinants of Goals.
10 Hours
- Unit-3:** Organizational Theory & Culture
Definition of Organizational Theory – Types of Organizational Theory - Organizational Culture – Types of culture – learning of culture – organization climate & features – developing a sound organization climate – organization effectiveness – levels and approaches.
10 Hours
- Unit-4:** Organization Change & Development
Meaning – features – factors in organization change – resistance to change – managing resistance to change – organization development – features and techniques.
10 Hours
- Unit-5:** Individuals in Organizations
Nature of individual differences – foundation of individual behavior- Models of Man – personality - meaning , determinants and theories of personality – perception – process – factors affecting perception .
10 Hours
- Unit-6:** Group Dynamics
Types of group – why do people join groups? Group behavior and group norms – learning – Meaning – definition – determinants of learning – theories of learning.
10 Hours
- Unit-7:** Motivation
Meaning – Nature – Positive and Negative Motivation – theories of Motivation Maslow's theory – Theory – X and Theory-Y, Morale – factors affecting Morale.
6 Hours

Skill Development Activities:

1. Draw different structures of an organization.
2. Identify any 10 companies and mention their goals / vision & Slogans.
3. Prepare a questionnaire with at least 10 questions on attitudes of employees towards their organization and collect the data.
4. Develop training modules for training workers in an organization.
5. List the various factors that contribute to job satisfaction and job dissatisfaction.
6. Identify the personality traits of any two famous personalities.
7. Visit an Organization and collect the information about motivational techniques adopted in it.

Books for References:

1. Organizational Behavior by Stephen Robbins
2. Organizational Behavior by Fred Luthans
3. Organizational Behavior by L.M. Prasad
4. Organizational Behavior by Shashi K Gupta, Rosy Joshin
5. Organizational Behavior by S.S. Khanka
6. Organizational Behavior by K.K. Ahuja.
7. Organizational Behavior by K. Ashwathappa.

ELECTIVE -1

HUMAN RESOURCE MANAGEMENT

1.HUMAN RESOUCSE DEVELOPMENT

Objective: To enable the students to understand the basic concepts of human resource development.

Unit -1 HRD: Meaning of Human Resource Development and Important of Human Resource Development, Objectives of Human Resource Development Scope of Human Resource Development

8Hours

Unit -2 Training :Objectives of Training, Importance of training, Meaning of Orientation, Objectives of orientation, Difference between Orientation and training the process of training, Methods of training – (Off the job training – Lectures, case study, role play, Business game, in-basket exercise, ; on the job Instruction, Vestibule, training by superiors, simulation, Apprenticeship designing training programme.

12 Hours

Unit-3 Performance Appraisal: Importance and Objectives of performance Appraisal; Approaches to performance appraisal' the evaluation process: tools for performances Appraisal – Traditional methods” free essay method; Merits & Demerits of traditional Method Modern Method of Appraisal and career development: Evaluation and problems of Appraisal: How to make performance appraisal a success?

10 Hours

Unit-4 Management Development: Purpose and objectives of management development factors inhibiting Management Development : pedagogical approaches to and techniques of management development on the job techniques :Under- study assignment or attachment method: Syndicate: off the job techniques – sensitivity training: Survey feed back.

10 Hours

Unit-5 Organizational Development :Meaning and definition of OD, characteristics of OD, goals of OD , benefits and limitation of OD, Process of OD program, what is a change process? Types of change, managing resistance.

10 Hours

Unit-6 Managing Quality and Productivity : Alternative work arrangements; Using quality circle programs; total quality management Programs; IT and HR – attitude surveys; Creating self – directed team; Empowering team work. Extending participative decision making, HR and business process reengineering.

8 Hours

Unit-7 Recent Trends in the area of HRD : Personality quotient , Emotional quotient, the changing view of Global HRD, the use of computer and the internet. **6 Hours**

Skill Development Activities:

1. Visit any organization and draft a chart of the personnel department .
2. Visit a firm of your choice and collect information on how training is given to its employees.
3. Interact with an employer of a firm and ascertain the criteria to be used for performance evaluation of his subordinates.
4. Visit and Identify the program conducted by any local industry as a part of TQM.
5. Identify and record the recent trends in HRD.
6. Give assignments to students and ask them to work in groups.
7. Conduct IQ test for students.

Books for References:

1. Pandey . HRD
2. C. B. Mamoria & S.V. Gankat, personnel Management
3. K Aswathappa, Human Resource Development
4. Rao & T.V varma, HRD
5. Jean marleen, performance oriented HRD
6. Gary dessler, Human Resource Development
7. Sharma, Human Resource Development

2. INDUSTRIAL RELATIONS

Objective: To enable the students to understand the basic concepts of industrial relations.

- | | |
|---------------|---|
| Unit-1 | <p>Introduction to Industrial Relations
 Definition and meaning, Concepts; Factors of industrial relations; Importance of industrial relations; Objective of Industrial relations; Approaches to industrial relations, the labor movement, characteristics of Indian Labor.</p> <p style="text-align: right;">8 Hours</p> |
| Unit-2 | <p>Indian Trade Unions
 Nature of trade Unions; functions of trade union; objectives & importance of trade Union: Trade Union movement: Reasons for employees to join trade Unions; trade union movement; problems of Trade Unions and remedies: trade union Act 1926; Trades Union Movement in India.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-3 | <p>Collective Bargaining
 Meaning and definition of collective bargaining, concept of collective bargaining, prerequisites for collective bargaining, the collective bargaining, process, principles of collective bargaining, essential conditions for the success of collective bargaining in India.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-4 | <p>Grievance Handling and Industrial Discipline;
 Concepts; causes of grievance; procedure for settlement; indiscipline/ misconduct causes of misconduct; Types of punishment under standing order.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-5 | <p>Industrial Disputes
 Meaning of Industrial conflicts, causes of Industrial conflicts, Types of Industrial conflicts – Strikes & Lockouts, Machinery for resolving Industrial Dispute under the industrial disputes Act 1947. Arbitration, adjudication, Prevention of industrial conflicts, Approaches to Settlement of Conflicts.</p> <p style="text-align: right;">12 Hours</p> |
| Unit-6 | <p>Collaboration and Workers Participation in Management.
 Bases of collaboration, interventions for collaboration; Meaning of workers participation in management, concepts and objectives of workers participation in management. Growth development of workers participation in management , types of workers participation in management.</p> <p style="text-align: right;">10 Hours</p> |
| Unit 7 | <p>Privatization and its impact on trade union: Impact of privatization on trade union movement, strength and weakness of trade union movement under changing scenario</p> <p style="text-align: right;">4 Hours</p> |

Skill Development Activities:

1. Visit a factory labor union and collect the recommendations placed by them before the management.
2. Visit an industrial establishments and identify the nature of industrial disputes exist.
3. Visit a factory in your area and collect the information on issues, where the workers are allowed to participate in management decisions.
4. Interact with the concerned authority at the factory and collect preventive measures to protect the environment.
5. Visit a factory and list out the disputes being referred to the grievance redressal cell established in the concerned jurisdiction.

Books for Reference:

1. Daver, Personnel management and Industrial Relations.
2. C. B. Memoroia- Dynamics of Industrial relations in India;
3. Johnson introduction to industrial relations
4. Sharma A. M, Industrial Relations
5. Biswath Ghosh, Personnel Management and Industrial Relations
6. Bhawanth- Flippo, personnel management and Industrial relations.
7. M.V. Pylee, Industrial Relations
8. Ahuja, Industrial Relations.

3. Labour Welfare and Social Security

Objective: To enable the students to understand the basic concepts of labour welfare and social security measures.

- | | |
|----------------|---|
| Unit-1 | <p>Introduction</p> <p>Concept, Definition, merits and demerits of welfare measures, Concepts of labour welfare & Social security, Types of welfare activities, statutory and non-statutory. Growth of labour welfare & Social security in India.</p> <p style="text-align: right;">06 Hours</p> |
| Unit-2 | <p>Occupational Hazards</p> <p>Types of accidents, causes of accidents, prevention of accidents.</p> <p style="text-align: right;">8 Hours</p> |
| Unit-3 | <p>Safety and welfare measures : need for safety, measure to ensure safety in organizations. The supervisors role in safety. Health physical health and mental health, problems and remedies, noise control. Job stress , communicable diseases. Alcoholism and drug abuse, violence in the work place, use of computers to monitor health and safety.</p> <p style="text-align: right;">8 Hours</p> |
| Unit -4 | <p>Living Conditions: Living conditions of employees and his family, continual education, housing for employee, recreation for employees.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-5 | <p>Counseling: Meaning of Counseling, Manager as a counselor, conditions for counseling counselors relations with the counselee, methods techniques and skills for counseling. Principles of personals counseling, cordial relationship, mutual recognition. Respect and coguences, empathy , Types of problems for counseling.</p> <p style="text-align: right;">12 Hours</p> |
| Unit-6 | <p>Post- Retirement benefits Provident Funds – purpose of provident fund, gratuity, statutory provisions regarding gratuity, pension.</p> <p style="text-align: right;">10 Hours</p> |
| Unit 7 | <p>Fringe benefits and services: meaning, objectives, coverage of benefits and services, Benefit programmes for management, problems raised by benefit programmes , Reasons for growth of benefits and services programs.</p> <p style="text-align: right;">10 Hours</p> |

Skill Development Activities:

1. Visit any organization to understand the various social security measures and implementations.
2. Visit any local industrial establishment and collect information on employees counseling cell.
3. Interact with a welfare officer of a local factory and collect information on safety measures at work place.
4. Give a list of Fringe benefits given to its employees by any leading industrial concern.
5. Prepare the list of occupational deceases and the nature of accidents.
6. Make a list of retirement benefits offered to employees

Books for Reference:

1. Arora, Labour law
2. D. Sanjeeviah, Labour Problems and industrial developments in India.
3. Sharma A. M .Aspects of labour welfare and social security
4. Prasanna Chandra, Labour problem social security and welfare.
5. Punekar and Deohan, Labour welfare, trade unionism and industrial relations.

4. Labour Law

Objective: To familiarize the students with the relevant frame work and their influence on workers.

- | | |
|---------------|--|
| Unit-1 | <p>Payment of Wages Act – 1936- short title and extent; definitions; responsibility for payment of wages; fixation of wage period; Time of payment of wages; mode of payment Deduction from wages for absence from duty; damage or loss for services rendered; recovery of advances & loans; maintenance of registers and records; penalty for offences; payment of undisbursed wages in case of death.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-2 | <p>Payment of Bonus Act-1965- Short title & Extent; definitions, eligibility payment of minimum and maximum bonus; for bonus; set on and set off of allocable surplus, time limit for payment of bonus.</p> <p style="text-align: right;">06 Hours</p> |
| Unit-3 | <p>Equal Remuneration Act-1976- Short title & Extent: Definitions, duty of employers to pay equal remuneration to men and women workers for same work or work of similar nature; no discrimination to be made while recruiting men and women workers, duty of employers to maintain registers.</p> <p style="text-align: right;">8 Hours</p> |
| Unit-4 | <p>ESI Act -1948, Short title & Extent: Definitions, Contributions-who is to be insured, principal employer to pay contribution in the first instance, general provisions as to payment of contributions, method of payment, benefits-sickness benefit, maternity benefit, disablement benefit, presumptions as to accidents arising in course of employment, dependents benefit, medical benefits, penalties- punishment for false statement, punishment for failure to pay contributions and prosecutions.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-5 | <p>Maternity Benefit Act-1961 Short title & application: Definitions, employment of, or work by, women prohibited during certain period, right to payment of maternity benefit, continuance of payment of maternity benefit in certain cases, Leave for miscarriage, leave for illness arising out of pregnancy/ delivery/ premature birth of child etc, nursing breaks.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-6 | <p>Payment of Gratuity Act-1972 Short title & Extent: Definitions, continuous service, payment of gratuity, compulsory insurance, nomination, determination of the amount of gratuity.</p> <p style="text-align: right;">06 Hours</p> |

Unit-7	<p>Factories Act-1948 Short title & Extent: Definitions, Health:- Cleanliness, disposal of waste, ventilation, dust and fume, artificial humidification, over crowding, lighting, drinking water, toilets, spittoons. Safety:- fencing of machinery, work on or near machinery in motion, employment of young person on dangerous machines, safety officer, Welfare:- Washing facilities for storing and drying clothing, facilities for sitting first aid appliances canteens, shelters and restrooms, crèches working hours for adults, annual leave with wages.</p>
	14 Hours

Skill Development Activities:

1. Visit any organization and familiarize with various forms and procedures. Followed under various legislations.
2. Ask the students to write down the wage structure of any organization for different grade of workers.
3. Make a visit to any firm and list out the distinguishing remark between male and female workers.
4. Draw a list of benefits an employee enjoys through ESI.
5. Visit an organization and collect information on payment of bonus to employees.

Books for Reference:

1. AM sarma, aspects of labour welfare & Social security
2. MS pandit & Shobha pandit, Business law
3. P . L. Malik, industrial law
4. N.D kapoor, industrial law.

ELECTIVE-II
Marketing management
1. Product and Sales management

Objective: To make the students understand the concepts of product and sales management and its ingredients.

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|---------------|---|-----------------|
| Unit-1 | Introduction : Product focused organization; functionally focused organization; product management- facts vs. fiction; changes affecting product management; product strategy. | 10 Hours |
| Unit-2 | Planning: Objectives of product planning; frequent mistakes in planning; the planning process; components of a good plan; product life cycle; market growth. | 10 Hours |
| Unit-3 | Product Attractiveness: Factors influencing a product; threat of new entrant, product differentiation bargaining power of buyers & suppliers; pressure from substitutes; environment analysis; product line management. | 12 Hours |
| Unit-4 | Competitor Analysis: Sources of Information, creation of a product features matrix; assessing competitor objectives & strategies; marketing strategy; differential advantage; product positioning. | 10 Hours |
| Unit-5 | Selling as Career: Qualities of a good salesman. Recruitment of a salesman in the organization product, knowledge- planned selling, Approach pre approach – meeting objectives – closing the sale- scales call, Customer psychology- buying motives of our customer- effective speaking- consumer product vs industrial products selling- trade relations- sales personnel recruitment selection, training, remuneration. | 12 Hours |
| Unit-6 | Role of Selling in a Planned Economy
Sales Organization: Branch set up – sales territories- role of communication in selling. Coverage plans- sales forecasting, sales quotas incentives- role of wholesalers, retailers – trade margins, discount and price structure, selling costs – sales motivation and leadership. | 10 Hours |

Skill Development Activities:

1. Select any product and examine the features of channels selected for distribution
2. Visit any organization and understand about remuneration and incentives to salesman.
3. Chart out product planning process
4. Chart sales promotion schemes of 2 consumer durable products and 2 non- consumer durable products.
5. Identify a product and position in the market chart it out.
6. Draw a product life cycle chart of any firm which has crossed all the stages.

Books for Reference:

1. Lehmann T. Donald 7 winter. Product Management, Tata McGraw – Hill
Edition: 3rd Edition
2. Still R. Richard, Cundiff W, Edward & Govoni AP Norman: Sales
management Decisions, Strateges and cases, prentice hall of India (P)
Ltd; new delhi, 2001, Eastern economy Edition – 5th Edition
3. Ramanujam and majumder, Product management.
4. Chunawalla S. A product management
5. Aswathappa, Product management'
6. Chunawalla, sales management.

2. Advertising and Media Management

Objectives: To familiarize the students with the concepts and ingredients of advertising and media management.

Unit -1 Introduction , changing concept of advertising social and economic aspects of advertising in the marketing mix in relation to profits. Advertising in India and abroad, law, ethics, morality, in relation to advertising, types of advertising; consumer, institutional, retail, trade, and professional.

10 Hours

Unit- 2 Advertising Planning & Decision Making: Planning framework; marketing strategy and situational analysis; marketing plan, communication process; DAGMAR approach, The advertising plan, identifying prospectus, ad appeals, stimulating and expanding demand, other functions of advertising.

10 Hours

Unit-3 Creative Execution and Judgment
Choosing an effective advertising theme sources, of themes, means of presentation, adapting presentation according to medium.
Creative approaches; Rational, Emotional, Using an ensorser; distraction effects;
Creative process: Coming up with an idea; Copyrighting; illustration;
Layout: Types of commercial; positioning and creative interpretation
Creative Styles: Rosser Reeves USA; David Ogilvy's- the Brand image and William Bernbash – Execution.

12 Hours

Unit-4 Advertising Agencies
Origin development of the agency. Organization. Structural, functions, departments. Accounts executive. Media planner and buyer. Copy writers. Visualizes. Studio manager. Research executive print production.
Client-agency relationship ; The advertising budget. Evaluating advertising research. Some typical and agency problems.

12 Hours

Unit-5 Media-Strategy: Role of media: Setting media budgets; types of ; media- related decision : media research and advertising decisions
Media tactics: media class decision: media vehicles decision; media option decision, scheduling and timing decisions; media buying & organization.

10 Hours

Unit -6 Advertising Regulations: Deceptive advertising; determining deceptive; advertising Research; Remedies; Competitions lawsuits; self- regulations; Advertising & Society effects on values and life-styles; Economic Effects of advertising;
06 Hours

Unit-7 E-Advertising: Evolution; Banner advertising; message strategy and tactics; Media strategy and tactics; Impact of E-advertising.

04 Hours

Skill Development Activities:

1. Examine the latest advertising strategies followed by an organization of student's choice.
2. Select any advertisement copy from any business magazine/ TV and examine the strength and weakness of the same.
3. List the advertising objectives on DAGMAR approach for any product of students choice.
4. Collect message contents of 10 products of your choice.
5. Develop Ad message for at least 5 products of students choice.

Books for Reference:

1. Batra, Rajeev, Myers, G. John ; Aaker, A. David; Advertising management 5th edition; Prentice- Hall of India (P) Ltd; February 2000
2. Chunnawalla, S.A & Setjoa L/C EPIMDATOPMS of ADVERTISING- theory & practice ; Himalaya publishing house; Mumbai; 5th revised edition-2002
3. Mohan, Mahendra; Advertising management – concepts and cases; Tata mcgraw- hill publishing company . Ltd; New delhi; 8th reprint; 1995
4. Sontakki, Advertising

3 INTERNATIONAL MARKETING

Objective: To familiarize the students with the concept of international marketing and business environment.

- | | |
|---------------|---|
| Unit-1 | Definition and Meaning of Export Management- importance and functions of export management – export procedures- preliminaries in brief – goods shipment procedure – principal export documents.
10 Hours |
| Unit-2 | International Marketing Environment and Marketing Strategy – Political and legal environment – Economic environment – cultural environment – market entry strategies.
10 Hours |
| Unit-3 | Export Pricing: Objectives – importance- methods of pricing- export finance – Terms of payments- pre and post shipment finance- EXIM Bank- Objectives & Functions only- ECGC and its Role – FEMA
12 Hours |
| Unit-4 | Export Promotion:- Objectives – organizational set up- incentives- Marketing assistance to exporters- Export houses – State Trading Corporation (STC), Free trade zones (FTZ) EOU's and SEZ's.
10 Hours |
| Unit-5 | Import Management- Meaning – Types of importers- steps for importing – Import Finance- Import clearance Procedure.
10 Hours |
| Unit-6 | Trade Barriers- Tariffs- Classification of tariffs- non tariff barriers- Quotas- Types- Tariffs v/s Quotas.
12 Hours |

SKILL DEVELOPMENT ACTIVITIES

1. Visit an exporter and find out his pricing strategy. Compare it with your conceptual knowledge.
2. Visit the foreign exchange cell of any bank and collect information on import finance schemes.
3. Visit EXIM bank of india's website and study their finance schemes to export business.
4. Check the SEZ website and study the various provisions for setting up a unit in one of the SEZs in India
5. Write down the list of documents related to preshipment and post shipment of exporting goods.
6. Very big projects like international Air ports, Thermal plants and highways should be entrusted to multi national companies. Find out the reasons for it.
7. Visit the WTO website and collect detailed information on the various WTO agreements connected to imports and exports.

Books for Reference

1. Export Marketing – N.G. Kale
2. Export & Import Management – Aseem Kumar
3. International Business – N.V. Badi
4. Export Management – N. Kumar & R. Mittal
5. International Trade & Export Management – Francis Cherunilam

4. Marketing of industrial Goods

Objectives: To familiarize the students with the concepts of marketing of industrial goods and marketing intelligence

Unit-1	Industrial Goods: Meaning, characteristics, classification. The industrial marketing system participants, channels. The relationships; Contract of sale Franchise. Agreements. Loyalty confidence reciprocity.	10 Hours
Unit-2	The Demand for Industrial Goods: Demand and product characteristics- market levels and product types- major equipment minor and accessory equipment –Fabricating and components parts- Process materials operationg supplies- Raw materials-derived demand – influence of ultimate buyer – influence of business conditions – influence of financial Conditions and price.	12 Hours
Unit-3	The Industrial Customer Buyer Motives: The core variable: quality service, price savings Assurance of supply buyer temperament	06 Hours
Unit-4	Purchasing System Documentation supporting investigation- sorting and appraising , alternative Competitive bids, negotiation make or buy selecting the alternatives. order placement follow-up and expediting.	08 Hours
Unit-5	Marketing Intelligence The marketing intelligence system – the search process – the evaluation process – measuring marketing performance.	08 Hours
Unit-6	Marketing Strategy Products and service component, the channel component- channel logistics, the price component- firm size – product type- product life cycle the cost factor- pricing decisions- pricing policies, the promotional component.	12 Hours
Unit-7	Marketing Control Performance standards and instruments of control.	08 Hours

Skill Development Activities:

1. Identify the core variables affecting demand for any industrial goods selected by the student.
2. Indicate the features of industrial goods on a comparative basis with that of FMCG.
3. Ascertain through survey the brand loyalty of consumers for any industrial goods.
4. Illustrate how social class difference influence a) Product lines and styles, b) advertising media selection.
5. Visit any ancillary plant in your area and collect details on a) types of components and parts mfd., b) level of demand c) pricing policy.
6. Interact with a few industrial customers and ascertain what motivates to buy.

Books for Reference:

1. Rechar d m. Rill Ralph S., Alexander and james S. Cross – industrial marketing.
2. Robert R. Reader – Edward I G. Brierty and betty h. Reeder, I industrial marketing.

Ascertain through survey the brand loyalty of consumers for any FMGG.
 Illustrate how social class difference influence (a) Product lines & styles
 (b) Advertising media selection.

Elective III

Finance

1. Financial Markets and Services.

Objectives: To familiarize the students with the conceptual knowledge of financial markets and services.

- Unit-1** Financial Market: Introduction: Structure of financial system; Equilibrium in financial markets. Overview of Indian financial system; financial system & Economic development; contribution of development financial institutions. **10 Hours**
- Unit-2** Non-Banking Financial Intermediaries: Investment & Finance companies; merchant banks Hire purchase finance; Lease finance; Housing finance; Venture capital funds and factoring. **08 Hours**
- Unit-3** Call Money Market – Introduction, meaning, participation & location, call rates and recent developments & trends; Treasury bill market – introduction, types of bills. Commercial Bill Market – Bill of Exchange, size of Bill market in India. Bill market rates; Market for commercial paper and certificate of deposits introduction, meaning of commercial paper, meaning of certificate of deposits; Discount market – introduction; Discounting service; Discount & finance house of India; Market for financial guarantees & government securities. **12 Hours**
- Unit-4** SEBI
Objectives of SEBI; organization and its functions, powers of SEBI; Role of SEBI in marketing of securities and protection of investor s' interest. **08 Hours**
- Unit-5** International Dimensions of Financial Markets
Introduction; Foreign exchange market; Exchange rates. **06 Hours**
- Unit-6** Mutual Funds- Introduction: Concepts : scope of MF; market evaluation; impact of growth on the economy; Types of mutual fund services, elements of MF marketing, product design pricing, promotion and distribution of products, customer service; marketing & market research, strategic marketing plan; credit rating – meaning functions and benefits of credit rating. **12 Hours**
- Unit-7** Recent Trend in Financial Services
Personalized banking- ATM; Tele- banking; E- banking credit & Debit card customization of investment portfolio; financial advisors. **08 Hours**

Skill Development Activities:

- Select any mutual fund and examine the various closed and open – ended schemes offered.
- Visit any housing finance companies and analysis the features of various financing schemes offered.
- Prepare a chart showing structure of financial markets
- Prepare a chart showing instruments of financial markets.
- Prepare a chart rating given by different rating agencies.
- Prepare a chart showing foreign exchange rates of atleast any two countries for one month.

Books for Reference:

- Gordon and narajan k . Financial market and services.
- Tony martin. Financial services.
- Christine and ennew. Market financial services.
- Jordan . Emerging sccnario of financial services.
- Advani V.K marketing of financial services/
- Gordon and natarajan, emerging scenario of financial services.
- Sharma. Financial service.

2. International Finance.

Objectives: To familiarize the students with the conceptual knowledge of international finance and liquidity management.

- | | | |
|---------------|---|-----------------|
| Unit-1 | International Finance;
Introduction; meaning of international finance; issues involved in international business & finance;
Currency to be used; credit worthiness; methods of payment; foreign exchange markets. | 8 Hours |
| Unit-2 | International Financial Management:
Meaning of international financial management; scope and significance of international financial management in international markets. | 8 Hours |
| Unit-3 | Foreign Exchange Rates.
Need for foreign exchange; foreign exchange market and market intermediaries; exchange rate determination; foreign exchange risk forwards, futures, swaps, options, valuations of future and swaps – valuation of options and efficiency of the exchange market; Convertibility of a rupee and its implications. | 12 Hours |
| Unit-4 | International Financial Markets:
Foreign Institutional investors – Regulations governing foreign institutional investors In India; global depository receipts – meaning; foreign Direct investment (FDI)- growth of FDI; Advantages and disadvantages of FDI to Host country and home country. | 10 Hours |
| Unit-5 | International Risk management:
Types of Risk – political, commercial, exchange control restrictions on remittance, differing tax system, sources of funds, exchange rate fluctuations, different stages and rates of inflation, risks of non – payment; managing Risk. | 10 Hours |
| Unit-6 | The IMF and international liquidity: the IMF and gold standard- a comparison | 6 hours |
| Unit-7 | The world bank group: the world bank-international development association-international finance corporation-Asian development bank- India and world bank group. | 10 Hours |

Skill Development Activities:

1. Visit any authorized dealers and understand the activities of dealing in foreign exchange.
2. Analyze the trend of FDI into India during the preceding two years.
3. Name the leading any ten Indian companies made an issue of GDR- ADR- FCCB in foreign market.
4. Write down the buying and selling rates of any leading foreign currencies.
5. Ascertain information on world bank and its group financial assistance to Indian infrastructure projects.

Books for Reference:

1. Mittal, International rate foreign exchange tariff policy.
2. Venkataraman K.V, finance of foreign trade and foreign exchange
3. Chowdery, Finance of foreign exchange
4. Chowdery, finance of foreign trade and foreign exchange.
5. Balachandran, foreign exchange.
6. Srivstava, international finance.

3. Cost and Financial Analysis

Objectives: To familiarize the students with the conceptual knowledge of cost analysis and financial interpretation.

- | | | |
|----------------|--|-----------------|
| Unit-1 | Understanding Financial Statements- basic concepts – presentation of information – statements form; full disclosure- generally accepted accounting principles. | 08 Hours |
| Unit-2 | Financial Statement Analysis – Tools of analysis – units of measurement – comparison of balance sheet – common size analysis – horizontal & vertical analysis- time series analysis- development analysis – divisional performance. | 10 Hours |
| Unit-3 | Comparison of Income Statements – profit and loss ratios – cost of sales to sales – vs-expenses to sales – analysis of variation in income – statement of cause of financial changes – increase / decreases in working capital- cash flow and fund flow analysis. | 10 Hours |
| Unit -4 | Financial Forecasting – sales forecast – projected income statement and balance sheet – formula method of forecasting additional fund needs – corporate financial planning models. | 10 Hours |
| Unit-5 | Cash Flow Analysis- Cost- volume- profit analysis- graphic and algebraic analysis differential cost analysis for managerial decisions – variance analysis. | 10 Hours |
| Unit-6 | Cost Analysis- applications and limitations – limitations of financial analysis-forecasting financial requirements to reflect price level changes- assessment of business risk. | 08 Hours |
| Unit-7 | Analysis and Interpretation of Financial Statements
Meaning – need – analysis- comparison- interpretation- objectives- types of analysis techniques of financial statement analysis- comparative financial statement analysis common size statement analysis- trend analysis. | 08 Hours |

Skill Development Activities:

1. Preparation of cash Flow statement on the basis of given information, and determination of cash from operation.
2. Collect a published financial statement and Identify : current assets, Current liabilities, non current assets and non current liabilities.
3. Preparing common size statement , trend percentage and comparative analysis collected from the published finance statement.
4. Visit a production plant in your area and collect information on budgets prepared by them.
5. Ascertain through survey of local business enterprises and collect information on their working capital requirements and sources.

Books for Reference:

1. Gupta R. L financial statement analysis
2. Kennedy D. Riralph, financial statement.

4. PORTFOLIO MANAGEMENT

Objectives: To familiarize the students with the avenues of investment opportunities and portfolio management.

- | | | |
|---------------|---|-----------------|
| Unit-1 | Introduction and Scope of the Subject, economic meaning and significance of savings , investments, speculation, gambling, and arbitrage mechanisms comparison between investment and speculation and its significance in Indian financial system. | 08 Hours |
| Unit-2 | Various Investment means Available in India, characteristic features of financial instruments – risk, return security, maturity, and optional features, finance vs investments – interactive decision elements. | 10 Hours |
| Unit-3 | Profile of in Indian Investors and Factors Influencing Investment decisions, financial positional, tax positions, risk perception and attitude. Introduction to systematic and non-systematic risks. | 8 Hours |
| Unit-4 | Mathematics of Financial Evaluation, discounting, compounding, annuities, present value and yield calculations. | 10 Hours |
| Unit-5 | Investment Opportunities: Company shares, debentures, bonds, convertible securities, hybrid securities, fixed deposits, gilt- edged securities, post office schemes, company and public provident funds, unit trust of India, LIC real estate. And insurance schemes. | 12 Hours |
| Unit-6 | Introduction of Portfolio Theory- contribution of William Sharpe and harry markowitz – mutual funds and investment avenues. | 10 Hours |
| Unit-7 | Features of Capital Markets and Functioning. New issues market, IPOs, valuation of issues fundamental and technical considerations- role of SEBI. | 06 Hours |

Skill Development Activities:

- Name any five companies debenture recently listed in any stock exchange.
- Examine the investment opportunities available to an employee.
- Write down the procedure involved in buying and selling shares and debentures through online and demat schemes.
- Ascertain through survey the investors preference as to investment.
- Illustrate through graph a day's sensex movement
- Identify and record the current directives of SEBI to safeguard the interest of investors.

Books for Reference:

1. Fisher & Jordan, investment management.
2. Avadhani, security analysis and portfolio management.
3. Bhalla, security analysis and portfolio management
4. puneethavathi & pandian, security analysis and portfolio management.
5. Prasanna Chandra, managing investments.

ELECTIVE-IV
Information Technology management
2. E-Business and Web Designing.

Objectives: To familiarize the students with the conceptual knowledge and application of E-Business and Web designing.

- Unit-1** Basic Internet, Fundamentals: Contents:
 Overview of the internet, Browsing the world wide web, electronic mail, basics of using FTP, news groups, searching the web to gain market intelligence, internet technology. **06 Hours**
- Unit-2:** E-Commerce:
 General framework of electronic commerce. Electronic commerce and media convergence multimedia content of e-commerce application, client server architecture of electronics commerce. The network infrastructure of e-commerce, components of the information highway . The intranets a network security problems and emerging safety solutions. Electronic commerce and the world wide web, electronic commerce application service different types of e-commerce application, world wide web architecture, trade EDI layered architecture, information flow with critical EDI. EDI application in international trade, EDI in finance transaction,. How EDI works electronic payment systems. Characteristics of electronic cash, smart cards and electronic payments. System credit card. **12 Hours**
- Unit-3** Electronic Customer Relationship Management.
 What is CRM
 Who is a customer
 How do we define CRM
 What is CRM Technology
 Putting the 'E' in E-CRM
 CRM and e CRM: difference
 The web experience
 The features of E-CRM
 Is E-CRM really separate.
 Using popular E-CRM software. **08 Hours**
- Unit-4** Mobile Commerce:
 Objectives of the course, what is m-commerce? Context and trends; the forces behind m-Commerce, simple reference model, signal propagation basic multiplexing techniques, including SDMA, FDMA, TDMA, CDMA basic modulation techniques, medium access control algorithms. **10 Hours**
- Unit-5** Web Designing using HTML, DHTML **10 Hours**

Unit-6 Programming in Visual Basic – Writing simple programs on visual basic- add records, delete records, modify records- multiple document interface. **18 Hours**

Skill Development Activities

- Visit a Web institute and get the print outs of sending an E-mail.
- Visit an ATM counter and get the print outs of mini statement of accounts.
- Write a statement to get CRM with updated relation with customer and write the Web experience that you have got while activating CRM.
- Write FDMA and SDMA technology that has been implemented in M-Commerce, along with an algorithm.
- Design menu for college admission- using visual basic.

Books for Reference:

- Peter loshin, E-commerce
- C.SV murthy, E-commerce
- Shu retty- E-buisiness with net commerce
- Schiller, mobile comunicatijon.
- Greenbeg, CRM at the speed of Light.
- Krishnamurthy & sandeep, E_commerce, text.

2. Enterprise Resource Planning

Objectives: To familiarize the students with the basic ingredients of enterprise resources planning.

Unit-1	Introduction to ERP	06 Hours
Unit-2	Evolution of ERP from Bill of Materials. MRP-I MRP-II, MRP-III and DRP ERP as a front- runner among automated “ enterprise management system”,	10 Hours
Unit-3	<p>Starting a Small Business:</p> <p>To understand what constitutes a business opportunity, scanning the environment for opportunities, evaluation of alternatives and selection based on personal competencies. An overview of the steps involved in starting a business venture-location, clearances and permits required – formalities licensing and registration procedures. Assessment of the market for the proposed project. To understand the importance of financial, technical and social feasibility of the project.</p>	10Hours
Unit-4	<p>Preparing the Business Plan (BP)</p> <p>Meaning of BP- Importance of business plan, preparation of business plan typical BP format – financial aspects of the BP, Marketing aspects of the BP-Human resource aspects of the BP- Technical aspects of the BP- Social aspects of the BP-Preparation of BP- common pitfalls to be avoided in preparation of a BP.</p>	10 Hours
Unit-5	Hierarchy of Strategies in an Enterprise. Consistency of the goals of ERP with the goals of the enterprise.	10 Hours
Unit-6	Information Architecture: ERP architecture based in client server model and information criteria.	10 Hours
Unit-7	ERP- A manufacturing perspective: Review	8 Hours

Skill Development Activities

- Implement ERP to prepare a Bill for MRP1, MRP-II
- How do you control the inflow of DRP and ERP as a front runner. Give an example.
- Visit an Entrepreneur and make an enquiry about the hierarchy of strategies adopted by him. Write also a flow chart for such strategy.
- How client server will interact with dedicated server with ERP architecture. Give an example.
- Visit an entrepreneur and get information from the firm about his manufacturing perspectives.

Books for Reference:

1. Entrepreneurship and small business management – Dr.C.B.Gupta
and Dr. S.S.Khanka
2. Entrepreneurial development – Dr. S.S.Khanka

3.Data Base Management System.

Objectives: To familiarize the students with the Knowledge of information technology and the ingredients of database management system.

- | | | |
|---------------|--|-----------------|
| Unit-1 | Introduction: Overview of database management, advantages of DBMS over file management system. Describing and storing data in a DBMS, data independence data isolation, data inconsistency. | 8 Hours |
| Unit-2 | Entity Relationship Modeling: entities, relationships, mappings, dependency constraints and notations. | 10 Hours |
| Unit-3 | Relational Data Model: Operations on tables, constraints. Advantages of relational model integrity rules, representing relational database schemes. | 10 Hours |
| Unit-4 | Relational Database Design: Database design, anomalies – insertion, deletion and update anomalies, objectives of normalization, various normal forms – 1NF, 2NF, 3NF, decomposition process, mapping ER model into relational structures | 14 Hours |
| Unit-5 | Data on Disk: Physical storage, storage hierarchy; disks, files, operations of files. | 08 Hours |
| Unit-6 | Security and Integrity: Aspects pertaining to database. | 08 Hours |
| Unit-7 | Computer crimes and cyber laws. | 4 Hours |

Skill Development Activities

1. Open a DBMS program and isolate the data from data dependence with an example.
2. Write an entity relationship model with regard to data dependency of the entity. Write any one entity model.
3. Write a schema of a software company with regard to the employees salary.
4. Use normalization forms with relation to admission to a hospital. Use 2NF.
5. Write a program to insert New employees into a file.
6. Ascertain through survey the latest computer crimes detected.

Books for Reference:

1. Elmassri, fundamental of database system.
2. C.J, Date. An introduction to database system.
3. Abraham silberchatz, henry. F. korth. S. sudarshan. Database system concepts.

4. System Analysis and Design

Objectives: To familiarize the students with the various phases involved in software development.

- Unit-1** Systems Concepts and the Information Systems Environment: The system concept, definition, characteristics of a system, elements of a system, types of system - information systems; a review of fundamental information decision support systems, expert systems, office information systems, personal and work group information systems. Systems owners, systems users, systems designers, systems builders, building blocks, expanding the information system, framework – building blocks of data process, interfaces, geography. **12 Hours**
- Unit-2** The Role of System Analyst- Definition, preparing career as a system analyst, interpersonal skills, technical skills, system analysis and design skills, multifaceted role of system analyst, analyst user interface, the place of analyst in the MIS organization. **08 Hours**
- Unit-3** Process Modeling-The tools for structured analysis, DFD, data dictionary, decision trees, structured English, decision tables, computer Aided system engineering (CASE). A CASE tool frame work. Architecture, benefits. **10 Hours**
- Unit-4** Feasibility and Cost Benefit Analysis- Feasibility considerations, steps in feasibility analysis, feasibility report, cost- benefit analysis, categories, data analysis. Procedure for cost benefit determination. The system proposal. **10 Hours**
- Unit-5** System Design: Strategies for system design. Introduction to structured design. Information engineering . prototyping JAD, RAD, object oriented design, Logical and physical design, Form driven methodology. Major development activities, personnel allocation, audit considerations processing controls and data validations, audit trail and documentation control. **12 Hours**
- Unit-6** Input/Output and User Interface Design:- Methods and issues for data capture and input; data capture. Data entry, data input, modern input methods, batch versus on-line inputs, internal controls for inputs. GUI controls for input design. Principles and guidelines for output design. Types of outputs, media and formats, system user issues for output design. **08 Hours**
- Unit-7** System Testing: Testing, different methods, nature of test data, test data test plan, activity networks for system testing. **04 Hours**

Skill Development Activities

1. Visit an organization and get the information about expert system and decision support system maintain by the organization.
2. Write a flow chart about the flow of system analyst to pass MIS to the workers.
3. Write a decision tree taken by top level executives of an enterprise.
4. Use CAD architecture in framing a model for giving employment to the prospective employees.
5. Write a flow chart to find out cost benefit analysis of a sole trader or partnership firm.

Books for Reference:

1. Whitten system analysis and design methods.
2. Elias M. Awadth, system analysis and design.
3. I.T.Hawryszkiewyez, introduction to SAD.

ELECTIVE V

1 Tourism Industry

Objectives: To familiarize the students with tourism resource planning and development.

- | | | |
|----------------|--|------------------|
| Unit-1 | Introduction- The origin of Tourism, Definition, nature and importance of tourism, Types of Tourism, Growth and development of domestic and international Tourism, recent trends in Tourism industry. | 12 Hours |
| Unit-2 | Tourism as an Industry: Meaning and Definition, components of Tourism industry (Tourists, Tourism product, Transportation sector, Accommodation sector, Tour operators). Significance of Tourism industry- Economic, socio-cultural, environmental, positive and negative impacts of Tourism industry. | 12 Hours. |
| Unit -3 | Planning and Development of Tourism-Meaning of Tourism planning, Need for Tourism planning, processes of Tourism planning, concept of Tourism demand and supply factors influencing Tourism demand and supply factors influencing Tourism development.. | 10 Hours |
| Unit-4 | Tourism Product and Typology-Meaning and nature of Tourism product, Tourism resources of India-Natural resources, cultural resources, Historical resources – UNESCO world Heritage sites in India. | 10 Hours |
| Unit-5 | Travel and Accommodation Industry- Travel Agency- Meaning, types and functions. Tour operators – meaning, types and functions. Accommodation industry – meaning and concepts of accommodation, types and services. | 10 Hours |
| Unit-6 | Tourism organization: WTO IATA UFTAA PATA DGCA etc., National tourism organizations TTDC and KSTDC | 10 Hours |

Skill Development Activities:

1. Name the important tourist destinations of your district.
2. Visit the website and make a list of reputed tour operators in India.
3. Make a list of heritage centres in Karnataka and mention the assistance extended by - UNESCO to these centres.
4. Make a record of the Hotels recognized - the Tourism Department of Karnataka.
5. Collect the tour package forms of Asian travels, Vikram travels vivek travels and other tour operators.

Books for Reference

1. Pran seth successful Tourism Management Vol. I sterling publishers pvt. Ltd New delhi-110020
2. Krishnan K karma and mohinder chand basics of Tourism- Theory , operation and practice, Kanishka publishers, Distributors, New Delhi 110002
3. A. L Bhatia, International Tourism Management, Sterling Publishers pvt ltd., New Delhi 110020
4. Chand mahinder, Travel Agency Management: An introductory Test, Anmoll publication, Edition 2000
5. Negi, Jagmohan, Tourist Guide and Tour Operation, Kanishka publishers 2004.
6. Dr. I.C. Gupta & Dr. Sushama kasbekar, Tourism Products of India. G.A publications 8A , Vrindavan Apartments, Manishpuri, Indore, M.P

2 Tourism Marketing

Objectives: To familiarize the students with the knowledge of marketing methods in tourism and tourism packaging.

- | | |
|---------------|---|
| Unit-1 | <p>The Concept Marketing, Meaning, nature and definition of marketing, Introduction of services marketing, classification and characteristics of services marketing. Developing marketing strategies for services firms. The adoption of marketing to Tourism.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-2 | <p>Planning for Tourism Marketing, Definition, need for marketing planning, objectives of marketing plan, defining the marketing mix. Market segmentation for tourism product role of segmentation, development of segmentation analysis.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-3 | <p>Marketing Methods in Travel and Tourism. Characteristics of sales in travel and Tourism. Developing an effective marketing programme developing effective marketing program community travel and tourism marketing.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-4 | <p>Travel and Tourism Packaging Concepts-Characteristics, methodology, and pricing of tour package, different pricing strategies in tourism sector.</p> <p style="text-align: right;">10 Hours</p> |
| Unit-5 | <p>Tourism Advertising and Public Relations –Defining advertising and public relations, role and objectives, elements of the promotion mix. Selecting the media, using promotional and publicity aids like periodicals, brochures, posters, hand out's, etc., Role of technology in Advertising and promotion of Tourism product.</p> <p style="text-align: right;">12 Hours</p> |
| Unit-6 | <p>Tourism destination marketing: Hospitability marketing –concierge marketing -importance of marketing in tourism</p> <p style="text-align: right;">12 Hours</p> |

Skill Development Activities.

1. Write down the advertising copy of a popular travel agents of India.
2. Make a list of travel agents and condition to be satisfied to call them as travel agents.
3. Collect the brochures, hand outs and periodicals of a travel agent in your district.
4. Indicate the current budget measures of the government to promote tourism.
5. ascertain through survey tour packaging offered by leading travel agents in India.

Books for Reference:

1. Kotler philips, marketing management tourism international press, london 1976
2. Maccarthy D. KJ. Basic marketing- a management approach.
3. Douglas foster travel and tourism management.
4. Negi. MS. Tourism and Heteliering.
5. Whab. S. Grampter, tourism marketing, tourism international press, London.1976
6. Stephan. F witt.. tourism marketing and management and management hand book, prentice hall, new yark 1985
7. Renal A. Nykiell. Marketing in hospitality industry (2nd Ed) van nestr and rein hold 1986.
8. maclean, hunter, marketing managements) tourism in your business) Canadian hotel and restaurant Ltd. 1984
9. Kenneth E. Clow and david L. Kurtz services marketing. Biztantra publications.
10. Tourism Marketing – R.K.Malhotra- Anmol Publications
11. Tourism Marketing –P.C.Sinha- Anmol Publications

3. Tourism product

Objectives: To familiarize the students with the knowledge of India's tourist resources and tourism product.

- | | |
|---------------|--|
| Unit-1 | Indian Geography, Population GDP, Economy and related factors
06 Hours |
| Unit-2 | India's Tourist Resources – Definition and differentiation. Tourist resources of India – types and typologies, cultural resource- Art and architecture, historical monument, religious and spiritual centres, fairs and festival, craftsmanship, folk custom, costumes and dresses, museums monuments and art galleries etc, natural tourist resources- rich diversity in land form and landscape, outstanding geographic features, climate water bodies and flora and fauna.
10 Hours |
| Unit-3 | Socio Cultural Resources-I
Architectural Heritage of India; Glimpses of India's architectural styles adopted over the ages, historical monuments of touristic significance, ancient, medieval and modern, their partial and regional dimension. Important historical/ archaeological sites museum, art galleries and libraries their location, assets and characteristics. Popular religious shrines/centers-Hindu Buddhist, Jain, Sikh, Muslim, Christian and others Yoga, meditation and other centers.
12 Hours |
| Unit-4 | Socio- Cultural Resources-II
Performing Arts of India, classical dances and dance styles, center of learning and performances, Indian folk dances, music and musical instrument; different schools of Indian music; status of vocal and instrumental music; new experiments. Handicrafts of India as potential tourist resources. Fairs and festival- social, religious and commercial fairs, promotional (tourism)fairs, viz: kite festival white water festival, snake boat race etc, Indian folk culture- folk culture folk custom and costumes, settlement patterns. Religious observations, folk – fore and legends. Created tourist destinations, academic scientific and industrial institutions.
12 Hours |
| Unit-5 | Natural Tourist Resources
Tourist Resource potential in mountains with special reference to Himalayas, resources and resource use patterns in the past, present and future perceptive India's main desert areas. Their geological structure. Development as desert tourism existing trends and facilities available, desert safaris and desert festival. Coastal areas, beaches and islands resources and resource pattern. Resources in islands with special reference to Andaman and nicobar islands. Overview on tourism development strategies. |

Unit-6 Heritage tourism in Karnataka : The concept, nature and antiquity of Karnataka – Archaeological sites, Brahmagiri, Eranakavalli, Maski, Talakad, T. Narasipura, Banavara, Sammaty, Hampi.

12 Hours

Skill Development Activities.

1. Write a note on different Historical Monuments and Museums in India
2. Describe the important religious and spiritual centers of Karnataka.
3. Name the different Musical instruments used and dances performed in various centers of India.
4. Write the various sports and entertainment products used in Rivers and Beaches in India.
5. Identify and collect information on tourist resource potential in mountains.

Books for Reference.

1. Percy Brown; Indian architecture hindu and Buddhist period.
2. Harie J.C; The art and architecture of Indian sub continent.
3. Bharatiya vidya bhawan; imperial unity.
4. Bharatiya vidya Bhawan classical age.
5. Acharya Ram Tourism & cultural heritage of India; ROSO publication (Jaipur, 1986)
6. Basham AL; the wonder that was India; Rupa and com Delhi-1988
7. The gazette of India history and culture, BVol.2 publication decision, ministry of information and broadcasting, government of India 1988
8. Mukerjee A.K. The CULTURE AND ART OF India- george allen unwin Ltd. London 1959
9. Hussain A.K: the national culture of India, national book trust, new delhi-1987
10. The treasure of marg publication Bombay Indian museums.

4. Travel Agency and Tour Operators Business.

Objectives: To familiarize the students with the Knowledge of travel agency and tour operators.

Unit-1	Distribution Channels in Tourism, Defining distribution and access systems, the functions of a full service distribution system. 12 Hours
Unit-2	Marketing Tourist Distributions, visitors attractions and Hotel Accommodation, Karnataka State Tourism policy (2008), Role of government in promoting tourism in India as well as Karnataka 14 Hours
Unit-3	Definition, Functions and organizational structure of a travel agency and the tour operators. Types of travel agents and their responsibilities, procedures for becoming an authorized Travel agent and Tour operators in India. 12 Hours
Unit-4	Transportation Scenario in India. Role of Airlines (Public and private), Role of Indian Railways, Role of private transporters in promoting Tourism business in India, WTO, PATA, IATA, TAAI – their roles. 12 Hours
Unit-5	Accommodation Industry, Types of Accommodation, Hotels, categories, Role of Government in promoting and developing accommodation Industry, Role of private sector in promotion of Tourism (Accommodation) Industry. 8 Hours
Unit-6	FHRAI- its role in development and promotion. 6 Hours

Skill Development Activities.

- Write down the various distribution channels normally used by authorized tour operators in India.
- List out the various concessions extended by the Government of India in promoting tourism industry.
- Write down the procedures to be followed by an individual or institution to become an authorized travel agent in India.
- State the different approaches adopted by various state governments to promote tourism through Indian railways.
- Write the different classes of hotels and amenities provided through government owned hotels to encourage tourism in India.

Books for Reference

1. Merissen Jome. W; Travel agents and tourism.
2. David H. Howel – Principal and methods of scheduling reservations (National publishers) 1987
3. AGarwal surinder travel agency management (Communication India 1983)
4. Geo. Chack professional travel agency management prentice hall London 1990
5. Bhatta. A.K. tourism development principles and policies sterling publishers, 1991 New Delhi.
6. William cordve- travel in india
7. National publishers. The world of travel, national publishers Delhi 1979
8. Tourism Reasearch , policy and regulation- P.C.Sinha-Anmol publications
9. Tourism Marketing P.C. Sinha Anmol Publications.

BM607 Project Report

KUVEMPU UNIVERSITY

Revised syllabus for BCA Course

And

BSc Computer Science Course

W.E.F 2016-17

**DEPARTMENT OF STUDIES AND RESEARCH IN
COMPUTER SCIENCE JANNASHAYADRI CAMPUS,
SHAKARGHATTA
KARNATAKA,INDIA**

KUVEMPU UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE
Syllabi of UG Courses in BCA and B.Sc (Computer Science)
For 2016-2017 New Batch

U. G. Board of Studies (BOS) in Computer Science

- | | | |
|----|---|-----------------|
| 01 | Dr. Narasimhamurthy V.
Associate Professor,
Govt. First Grade College,
Shimogga | Chairman |
| | | |
| 02 | Dr. Prabhakar C.J
Assistant Professor,
Dept. of Computer Science,
Kuvempu University. | Member |
| | | |
| 03 | Shri. Ravikumar M
Assistant Professor,
Dept. of Computer Science,
Kuvempu University. | Member |
| | | |
| 04 | Dr. Suresha M
Assistant Professor,
Dept. of Computer Science,
Kuvempu University. | Member |

**Regulations for BCA course under semester scheme
(With effect from 2016-17)**

Eligibility for Admission

1. A candidate who passed the three year Diploma in the branch of computer science, examination conducted by the board of Technical education, Government of Karnataka, shall be eligible for admission to first semester of BCA degree course.
2. A candidate who passed the two-year Pre-University examination in science/commerce of Karnataka state or any other examination considered as equivalent there to is eligible for admission to the first semester of BCA degree course.
3. If he/she is unable to pass or complete the degree within 6 years he/she should take readmission into BCA for I semester (study all the 6 semesters from first).

II) Claim of Exemption

A candidate who keeps terms for I, II and V semesters be allowed to keep terms for II, IV and VI semesters respectively, subjected to the following conditions:

1. A candidate who passes 50% of theory and practical's put together of I and II semester examinations (at the end of second semester) be allowed to keep terms for III semester.
2. A candidate who passes fully I and II semesters and 50% of theory and practical's put together of III and IV semesters examinations (at the end of IV semester) be allowed to keep terms for V semester.

BCA Regulations

For BSc course only students completing PUC or its equivalent examination with science subjects are eligible. For BCA course only students completing PUC or its equivalent examination with science subjects and PUC (Commerce) or its equivalent examination with Mathematics as one of the subjects are eligible.

R.1

a) Title of the course: Bachelor of Computer Applications (BCA)

b) Duration of the Course: The course shall be of three years duration spread over six semesters

c) Scheme of the Study:

- i) There shall be six theory papers and one practical each carrying 100 marks (80+20) for first semester and second semester
- ii) There shall be five theory papers, two practical papers each carrying 100 marks (80+20) from third to fifth semester
- iii) The project work shall be carried out either independently or jointly (minimum 3 students and maximum 5 students in a batch)
- iv) Medium of Instruction: The medium of instruction shall be English

d) Scheme of Examination:

- i) At the end of each semester there shall be university examination of three hours duration in each of the theory paper/practical carrying 80 marks
- ii) Internal assessment (IA) carrying 20 Marks in each of the theory Paper /practical shall be based on the performance of the student in two tests of one hour duration. No minimum for passing is required in IA
- iii) At the end of the sixth semester each student shall be able to submit the completed project report for the evaluation which shall be certified by internal guide and duly signed by the HOD and the principal. The project report and Viva-voce shall be evaluated by both Internal and External examiners.

R.2 Each semester shall be of 4 months duration

R.3 Attendance

Each student must have at least 75% attendance in each of the course (theory and Practical) in each semester. Shortage of attendance will be dealt with as per university rule from time to time.

R.4 Carry over system

A candidate is allowed to carry over maximum of 60% uncleared (failed) papers and/Practical's of previous semester to subsequent semesters from the first to sixth semester to subsequent semester from the first to sixth semester

R.5 The maximum period for completion of the course shall be six years from the date of admission

R. 6 Eligibility for admission:

- a) Any student who has passed PUC-II in science or commerce subject secured a minimum of 35% of marks.

OR

- b) Any student who has passed JOC(job Oriented Course) in Computer Technique/computer Applications/Electronics/Electrical branch with minimum of 35% of marks in aggregate in all the semesters/years.

OR

- c) Any student who has passed diploma in engineering (Three years duration of course Regulated by and affiliated to AICTE) in computer science/Computer applications/Electronics/Electrical branch with minimum of 35% of marks in aggregate in all the semesters/years

OR

- d) Any student who has passed Industrial training Institutes(ITI) (Regulated by and affiliated to AICTE) in Computer Science/Computer applications/Electronics/Electrical branch with minimum of 35% of marks in aggregate in all the semesters

R.7 Admission Procedure

- a) Merit list shall be prepared based on marks obtained in eligible course.
- b) Reservation: as per the notification/Govt.orders from the university/Govt from time to time.

R.8 Results:

- a) Minimum for pass in each of theory paper/practical (computer lab)/Project report shall be 35% at the university semester examination.
- b) The aggregate minimum for pass in each of the theory/Practical (computer lab)/Project work shall be 40% of marks in each course including IA/Viva-voce minimum marks is required in IA/Viva-Voce

NEW SYLLABUS FOR BCA (EFFECT FROM 2016-17)

Semester	First	Weekly hours	Internal marks	External marks	total
Paper code	Subject				
BCA01/02/03/04	KAN/SANS/URDU/HINDI-I	4	20	80	100
BCA05	ENGLISH-I	4	20	80	100
BCA13	MATHEMATICS-I FOR COMPUTER APPLICATION	4	20	80	100
BCA14	COMPUTER FUNDAMENTALS	4	20	80	100
BCA15	C -PROGRAMMING	4	20	80	100
BCA18	DIGITAL FUNDAMENTALS	4	20	80	100
BCA17	C PROGRAMMING LAB	3	20	80	100
Total		27			700

Semester	second	Weekly hours	Internal marks	External marks	total
Paper code	Subject				
BCA01/02/03/04	KAN/SANS/URDU/HINDI-II	4	20	80	100
BCA05	ENGLISH-II	4	20	80	100
BCA23	MATHEMATICS-II FOR COMPUTER APPLICATION	4	20	80	100
BCA24	COA	4	20	80	100
BCA25	STATISTICS AND PROBABILITY	4	20	80	100
BCA26	DATA STRUCTURE USING C	3	20	80	100
BCA27	DATA STRUCTURE LAB	3	20	80	100
Total		27			700

Semester	THIRD	Weekly hours	Internal marks	External marks	total
Paper code	SUBJECT				
BCA01/02/03/04	KAN/SANS/URDU/HINDI-III	4	20	80	100
BCA05	ENGLISH-III	4	20	80	100
BCA33	OBJECT ORIENTED PROGRAMMING WITH C++	4	20	80	100
BCA34	SYSTEM SOFTWARE	4	20	80	100
BCA35	DATA BASE MANAGEMENT SYSTEM	4	20	80	100
BCA36	C++ LAB	3	20	80	100
BCA37	SQL LAB	3	20	80	100
TOTAL		26			700

Semester	FOURTH	Weekly y hours	Internal marks	External marks	total
Paper code	SUBJECT				
BCA01/02/03/04	KAN/SANS/URDU/HINDI-IV	4	20	80	100
BCA05	ENGLISH-II	4	20	80	100
BCA43	JAVA PROGRAMMING	4	20	80	100
BCA44	COMPUTER GRAPHICS AND MULTIMEDIA	4	20	80	100
BCA45	DATAWAREHOUSING AND DATA MINIG	4	20	80	100
BCA46	JAVA LAB	3	20	80	100
BCA47	CG LAB	3	20	80	100
TOTAL		26			700

Semester	FIFTH	Weekly hours	Internal marks	External marks	total
Paper code	SUBJECT				
BCA51	ADVANCED JAVA PROGRAMMING	4	20	80	100
BCA52	DATA COMMUNICATION	4	20	80	100
BCA53	WEB TECHNOLOGY WITH PHP	4	20	80	100
BCA54	OPERATING SYSTEM	4	20	80	100
BCA55*	SOFTWARE ENGINEERING	4	20	80	100
BCA56	WEB TECHNOLOGY LAB	3	20	80	100
BCA57	ADVANCED JAVA LAB	3	20	80	100
TOTAL		26			700

Semester	SIXTH	Weekly hours	Internal marks	External marks	total
Paper code	SUBJECT				
BCA61	COMPUTER NETWORKS	4	20	80	100
BCA62	DOT NET WITH C#	4	20	80	100
BCA63	UNIX AND SHELL PROGRAMMING	4	20	80	100
BCA64	UNIX AND SHELL PROGRAMMING LAB	3	20	80	100
BCA65	PROJECT LAB	3	20	80	100
TOTAL		18			500

NEW SYLLABUS FOR B.Sc. (Computer Science)

(EFFECT FROM 2016-17)

[illegible]

FIRST SEMESTER BCA

BCA-13 : MATHEMATICS –I FOR COMPUTER APPLICATIONS

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit-1 SETS, RELATIONS AND FUNCTIONS

10hrs

Definition of a set, sub-set with examples, Venn diagrams, types of sets-equal sets, null set, disjoint sets, finite set, infinite set, power set, cardinality of set. Operations on sets-union and intersection of two sets, complement of a set, difference of two sets, symmetric difference of sets. Algebraic properties of set operations, addition principle for two finite sets and for three disjoint sets. Computer representation of sets and subsets, strings and regular expressions. Definition of a relation with examples, types of relations-empty, universal, trivial, equivalence, reflexive, symmetric, transitive relation (definition and examples only, no problems). Definition of a function with examples, types of function, one-to-one (injective), Binary operation-commutative, associative, identity, invertible (definition and examples only, no problems). Functions for computer science-characteristic function, floor function, ceiling function.

Unit-2 LOGIC AND REASONING

10 hrs

Definition of proposition or statement, proposition variables, negation of statements, truth table, conjunction, disjunction, implications quantifiers- predicate, universal quantifier, universal quantification, existential quantification. Conditional statement/implication, contrapositive and converse, equivalence or biconditional, tautology, contradiction, logical equivalence, properties of proposition operation-commutative, associative, distributive, idempotent negation. Simple problems on tautology and equivalence. Rules for validating statements

Unit-3 MATHEMATICAL INDUCTION AND COUNTING

10hrs

Principle of mathematical induction, simple problems on principle of mathematical induction. Fundamental principle of counting (statement with examples only), permutations- definition and simple problems. combinations- definition and simple problems. pigeonhole principle- statement and proof, extended pigeonhole principle- statement and proof.

Unit-4 MATRICES

10 hrs

Definition of matrix and order of matrix, types of matrices-column matrix, row matrix, square matrix, diagonal matrix, scalar matrix, identity matrix, zero matrix (definition and examples only, no problems), equality of matrices (definition and examples), simple problems on equality of matrices. operations on matrices-addition, subtraction, product of two matrices, scalar multiplication of a matrix, inverse of a matrix, simple problems on these operations.

Unit-5 DETERMINANTS

08 hrs

Definition of determinant(definition and examples), determinant of matrix of order one , order two and order three(simple problems),properties of determinant(examples only, no verification),applications of determinants and matrices for solving the system of linear equations of two variables and three variables(simple problems),applications of determinant and matrices for checking the system of linear equations for consistency and inconsistency(simple problems).

Refence Books:

- 1.Text book of Mathematics – Shanthi Narayan
- 2.Text book of Mathematics – S. Lipschutz

QUESTION PAPER PATTERN

PART- I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks.
Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.
The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 4
- Question 7 from Unit 5

BCA 14 COMPUTER FUNDAMENTALS

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1- Introduction to Computer Systems

10hrs

Definition of a Computer, History of Computers, Generations of Computers, Block diagram of a Computer with functional units (explanation), Parts of a computer system with peripherals (explanation of peripherals), and essential computer hardware , Information processing Cycle.

Unit 2- Input and output device

05hrs

Input devices-key board mouse, track ball, light pen, joy stick(explanation with diagram and working),output devices,monitors types of monitors printing and types of printers and working with advantages and disadvantages. Representation of data, text code-EBCDIC, ASCII, EXTENDED, ASCII, UNICODE. Memory: Tracks and sectors, cache memory Primary memory: RAM and its types,ROM and its types Secondary memory : hard disk,CD-ROM,DVD

Unit 3. Software:

08 hrs

Definition of software, types of software's application and system software with example , assembler, compiler, interpreter, linker, loader (Definitions only).Classification of languages high level and low level language(assembly and machine level) advantage and disadvantages.Operating System Basics : Definition, functions of an operating system, types of operating system, graphical user interface - basic components of GUI.MS DOS COMMANDS with syntax and example : copycon,type,copy,rename,del,make directory,remove directory,dir and its types,copy files from one drive to other drive,tree,hiding files)

Unit 4- Problem Solving Techniques :

10 hrs

Problem Definition, Problem Analysis, Design of Problems and Design Tools. ALGORITHMS: Algorithm-definition, Characteristics, Notations, Advantages and Disadvantages. FLOWCHART: Definition, Symbols, Advantages and Disadvantages. Debugging, Testing, Documentation and Maintenance. Writing an algorithm and flowchart : Area of circle, arithmetical operations, simple interest and compound interest, quadratic equation, largest of three numbers, sum of N natural numbers, factorial of number, Fibonacci series, prime number,reverse a given number.

Unit 5- Computer Networks -basic concepts

05 hrs

Definition,uses of network,types of network,network topology,network transmission media(twisted pair,co axial,optical fiber), definitions of network terface card(NIC),Hub,Bridge,Switch,Router,Bandwidth),internet and its applications,understanding world wide web(how the web works,web browsers)

References:

1. Computer fundamentals- RAJARAMANNA
2. Computer fundamentals- P B KOTTUR

QUESTION PAPER PATTERN

PART -I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks.

Each question must contain sub-questions-(a), (b), (c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1

Question 2 from Unit 2

Question 3 from Unit 2

Question 4 from Unit 3

Question 5 from Unit 4

Question 6 from Unit 4

Question 7 from Unit 5

BCA 15: C Programming

Number of Teaching Hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1- Introduction

8hrs

History of c-programming, Features, basic program structure, character set, tokens, keywords and identifiers. Constants, variables, data types, variable declaration, symbolic constant definition.

Unit 2 –Operators

10hrs

Arithmetic, relational, logical, assignment, increment and decrement, conditional, bitwise and special operators, Arithmetic expressions, precedence of operators and associativity. Type conversions, mathematical functions. Managing I/O operations – reading and writing a character, formatted and unformatted I/O. Review of algorithm and flow chart

Unit 3- Decision making, branching and looping

10hrs

If and if-else statement, nested if, else if ladder, switch statement, ? operator, go to statement, while, do-while and for, nested for, infinity for loop, examples, break and continue statements.

Unit 4- Arrays and Functions

10hrs

One and two dimensional arrays, array initialization. Strings - declaration and initialization of string variable, reading and writing strings, string handling functions. Functions – Need, syntax of function declaration, all types of functions, nesting of functions, categories, parameter passing mechanism, function with arrays, Recursion .

Unit 5-Structures And Pointers: Pointers- concept, pointer operator and operation

10hrs

Pointer arithmetic, dynamic memory allocation, command line arguments. Structure Definition, declaration, accessing structure members, structure with in structure, example programs, structure with array, union and difference between structure and union with example programs,typedef,enum

Reference :

1. Computer Concepts and Programming, *Padma Reddy*
2. Let us C , Yashwanth Kanetkar
3. Ansi C, *Balagurusamy*

QUESTION PAPER PATTERN

PART- I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART- II 75 Marks There shall be 07 questions carrying equal 15 Marks.

Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 3

Question 5 from Unit 4

Question 6 from Unit 4

Question 7 from Unit 5

BCA-16 DIGITAL FUNDAMENTALS

Number of Teaching Hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1- Number system and codes:

04 Hrs

Binary number system, decimal number system, octal number system, hexadecimal number system. Bases inter conversions. Representation of negative numbers 1's and 2's complements. Codes: BCD, GRAY, EXCESS-3.

Unit 2- Boolean algebra and logic systems:

10 Hrs

Laws of Boolean algebra, Boolean laws. Evaluation of Boolean expression, De Morgan's theorems and proof, simplification on Boolean expressions using Boolean laws Basic gates (AND, OR, NOT): truth table, Definition, Boolean expression and symbols, universal gates (NAND, NOR): truth table, definition, Boolean expression and symbols, design of basic gates using NAND and NOR gates. Logical gates using NAND and NOR, Design of given Boolean expression using basic gates or NAND gate or NOR gate. XOR and XNOR gate (Definition, Boolean expression and symbols, truth table).

Unit 3- Simplification of Boolean functions:

12 Hrs

SOP and POS form, min term and max term, expression of Boolean equation in Min and Max term (conversion of SOP and POS forms to standard form) **K-map method: Rules**, simplification of Boolean equation using K-map (up to 4 variables), without and with don't-care condition, Implementation using basic gates or NAND gate or NOR gate, Quine - Mc Cluskey Tabulation method, determination and selection of prime implicants.

Unit 4- Combination logic:

08Hrs

Design procedure, design of half adder and full adder, half subtractor and full subtractor. Code converters:- BCD to Excess 3 code, gray code, magnitude comparator, encoders (BCD to decimal), decoder (decimal to BCD), multiplexer(4:1 and 8:1), de-multiplexer(1:4 and 1:8).

Unit 5- Sequential logic:

14 Hrs

Introduction, Flip-flops – SR, JK, D, T, JK-MS (Detailed Study) Registers – Introduction, shift register- types and applications. Counters – synchronous and asynchronous counters (Up, down, up down and Mod counters, ring counter, Johnson counter) with timing diagram.

References:

1. Digital Logic and Computer Design- M. Morris Mano
2. Digital fundamentals – B. Basavaraj

QUESTION PAPER PATTERN

PART- I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART -II 75 Marks There shall be 07 questions carrying equal 15 Marks.

Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 3

Question 5 from Unit 4

Question 6 from Unit 5

Question 7 from Unit 5

BCA 17 C- programming lab

PART - A

1. All roots of quadratic equation
2. First biggest and second biggest among n numbers
3. Prime numbers between M and N ($M \leq N$)
4. Fibonacci series between M and N
5. Binary to Octal conversion
6. Sorting an unsorted array'
7. Deleting the repeated elements in an array

PART - B

8. Any four String handling function using switch-case
9. Addition of two matrices
10. Multiplication of two matrices
11. Comparison of $[A]$ and $[A]^T$
12. Sum of upper triangular, lower triangular and diagonal elements of a square matrix.
13. Binary and linear search in an array using function
14. Norm and trace of a matrix

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks
Viva – voce - 10 Marks
Record - 10 Marks

C-Program	Flowchart/Algorithm	10 Marks
	2 Program Writing	30 Marks
	Error free Compilation or Partial output	10 Marks
	Correct output with proper display	10 Marks

SECOND SEMESTER BCA

BCA 23 MATHEMATICS –II FOR COMPUTER APPLICATIONS

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1 - Groups theory

08 hrs

Definition of group, sub group, integral powers of element of a group, order of an element, properties related to order of an element of a group, cyclic groups, properties of cyclic group, coset decomposition of a group with examples

Unit 2 - Introduction to Graph theory

10 hrs

Definition of graph, graph as models, matrices and isomorphism, graph terminologies-definitions, properties and examples, Decomposition and special graphs. Paths, cycles and trails -connection in graphs, bipartite graphs, Eulerian circuits. Vertex degree and counting-counting extremal problems and graphic sequences and bijections paths, cycles and trails-connection in graphs

Unit 3 – Directed Graphs

10 hrs

Definition of directed graph, properties and examples, vertex degrees, Eulerian digraphs, orientations and tournaments. Trees and distance-basic properties, properties of trees, distance in trees and graphs, disjoint spanning trees, spanning trees and enumeration of trees, Hamilton paths and circuits, Representation and Isomorphism, colouring graphs. Decomposition of graphs, special graphs. Optimization and trees-minimum spanning tree, shortest paths, trees in computer science.

Unit 4 – Introduction to operations research

10 hrs

Nature and definition of OR, meaning, models characteristics, advantages. General methods for solving O.R..models - analytical, numeric and Monte Carlo. Advantages and scope. 10hrs

Unit 5 – Linear programming problem, transportation, assignment

10 hrs

Linear Programming Problems: Formulation (both minimization and maximization type) solution of LPP using graphical method. General LPP. Basic solutions and degenerate solutions. Standard form and canonical form. Characteristic features of LPP. Transportation problem(NWC,LC,VAM),Assignment problem, Travelling salesman Problem

Reference Books:

1. Introduction to Graph theory by S. Lipschutz
2. Operations research by S. D. Sharma
3. Operation Research by Kalavathi.
4. Discrete Mathematical Structures by Bernard Kolman

QUESTION PAPER PATTERN**PART -I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 2
- Question 3 from Unit 3
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5

BCA 24 COMPUTER ORGANISATION AND ARCHITECTURE

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1- Basic Structure of Computers

10hrs

Basic operational concepts, Bus Structures, performance, Multiprocessors and Multicomputer, Historical perspective.

Unit 2- Machine instructions and programs

10 hrs

Numbers, Arithmetic Operation and Characters, Memory Location and Addresses, Memory Operations, Instruction and Instruction Sequencing, Addressing Modes, Assembly Language, Basic Input/output Operation, Stacks and Queues, Subroutines, Additional Instructions.

Unit 3- Input/ output organization

10 hrs

Accessing I/O Devices, Interrupts, Direct Memory Access, Buses, Interface Circuits, Standard I/O interfaces

Unit 4- The memory system

10 hrs

Basic Concepts, Semiconductor RAM memories, Cache memories, Virtual Memories.

Unit 5- Basic processing unit

10 hrs

Some fundamental concepts , execution of complete instruction, multiple-bus organization , introduction on hardwired control and Micro programmed control, distinguish between hardware control and micro control

References:

1. Computer organization : Carl Hamacher, Zvonko Vranesic and Safwat Zaky McGraw
2. Digital Logic and computer design : Morris Mano, M.
4. Computer Architecture and Organisation : Tanenbaum, A.S.
5. Computer Architecture and Organisation : Hayes, J.P

QUESTION PAPER PATTERN**PART- I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks.

Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1

Question 2 from Unit 2

Question 3 from Unit 2

Question 4 from Unit 3

Question 5 from Unit 4

Question 6 from Unit 5

Question 7 from Unit 5

BCA 25 STATISTICS AND PROBABILITY

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1- Introduction to statistics

10 hrs

Definition of statistics, scope of statistics, characteristics of statistics, functions and limitations of statistics. Basic concepts(definitions only)-units/ individuals, populations/universe, sample, variable, attribute, discrete variable, continuous variable, qualitative data and quantitative data. Stages of Statistical method – collection, organisation/classification, presentation, analysis and interpretation of data (in brief).Classification of data-definition, objectives, types of classification. Definitions of frequency, class frequency, frequency distribution ,discrete frequency distribution, continuous frequency distribution, class-inclusive class and exclusive class, class limits, correction factor, open-end frequency distribution, mid-point or class mark, width/size of class number of classes, cumulative frequency, frequency density. Rules/Guidelines for classification. Tabulation-definition, objectives, types of tables-one way/simple, two way and manifold tables(dominions only).

Unit 2 -Analysis of Univariate data

10 hrs

Definitions-central tendency, average, arithmetic mean, mode, median, geometric mean and harmonic mean. Simple problems on arithmetic mean ,geometric mean and harmonic mean. Measures of Dispersion- range, range coefficient, mean deviation, mean deviation coefficient and standard deviation, standard deviation coefficient (definitions only). simple problems on mean deviation, mean deviation coefficient and standard deviation, standard deviation coefficient.

Unit 3 -Analysis of Bivariate data

10 hrs

Correlation-definition, types of correlation (i)based on number of variables-simple, multiple and partial correlation, (ii) based on direction of change –positive and negative correlation, (iii) based on change in proportion-linear and non- linear correlation(explanation in brief).Measurement of correlation-scatter diagram method to represent data(brief explanation with merits and demerits),Karl Pearson's coefficient of correlation formula and simple problems on this formula, Spearman's Rank correlation coefficient formula and simple problems on this formula.

Regression- definition, difference between correlation and regression, regression line, regression equation, properties of regression lines, uses of regression analysis. Simple problems on regression equations.

Unit 4 - Probability theory

10 hrs

Definition of probability, experiment, events, sample space. Types of events-simple, composite, equally likely, mutually exclusive, exhaustive, independent and dependent events(definition and examples).Classical definition of Probability with example, axiomatic

definition of probability with example. Union and intersection of two events with example. Definition of conditional probability, statement and proof of addition theorem of probability for two non-mutually exclusive events(theorem of total probability)and problems on this theorem, statement and proof of multiplication theorem of probability for two independent events(theorem of compound probability)and problems on this theorem. Bayes's theorem(statement only).

Unit-5 Probability distributions

08 hrs

Random variable-definition, types of random variables-discrete and continuous(definitions and examples only), definition of probability distribution, definition of mathematical expectation $E(X)$ and variance $V(X)$ of random variable 'X', types of probability distributions-Bernoulli distribution, Binomial distribution, Poisson distribution and Normal distribution(simple problems on these).

Reference Books:

1. Statistics and probability by B.M Aggarwal
2. Statistics by Rajmohan

QUESTION PAPER PATTERN**PART I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 2
- Question 3 from Unit 3
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 4
- Question 7 from Unit 5

BCA 26 DATA STRUCTURES USING C

Number of Teaching hours – 48

Theory Examination- 80 Max marks.
marks.

Internal Assessment- 20 Max

Unit 1-Introduction

10 hrs

Review of structures and pointers(briefly),definition of data structure, types(primitive, nonprimitive-linear and non linear).Linear data structure-Stack: Definition and example, operations, representation of stack in C, evaluation of postfix expression, conversion from infix to postfix using stack table. Recursion: Recursive definition, and process, Recursion in C, writing Recursive programs
efficiency of recursion- examples

Unit 2 – Queue

10 hrs

Definition and example, operations, representation of queue in C and its types- Ordinary queue, circular queue, priority queues, double ended queue.

Unit 3- Linked list

10 hrs

Definition and example, stack and queue operations using linked list, insert and delete node in between a list, circular linked list and doubly linked list (concepts only).

Unit 4- Trees

10 hrs

Tree terminologies, Binary tree, binary tree representation, types of binary tree - linked representation, tree traversals, and binary search tree and their applications, algorithm on searching element in a binary search tree, arithmetic expression in tree representation

Unit 5- Searching and Sorting

08 hrs

Basic search technique, sequential search, and its efficiency searching ordered table- index sequential search, Binary search, interpolation search, binary tree searching, Hashing (open address and close address).Sorting: General background, quick sort, insertion sort – simple insertion, shell sort, radix sort, selection sort, binary tree sort, heap sort, merge sort.

Reference Books:

1. Data structures using C and C++ - Yedidyah et al
2. Programming in ANSI C - E. Balaguruswamy
3. Data structures and programming design using C - Robert Kruse PIII publications
4. Data structures and applications - Trembly and Sorenson
5. Systematic approach to data structure Padmareddy

QUESTION PAPER PATTERN**PART I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 1
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5

BCA 27 DATA STRUCTURES LAB

Part – A

1. Implementation of stack
2. Evaluation of post fix expression
3. Implementation of queue
4. Implementation of circular queue using structures
5. Shell sort

Part – B

1. Conversion of infix to postfix
2. Implementation of stack using linked list
3. Implementation of queue using linked list
4. Binary tree traversals
5. Quick sort
6. Heap sort
7. Tree sort

PRACTICAL EXAM SCHEME

Record Manual- 10 Marks

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Part –A	One Program Max marks 30	Flowchart/Algorithm	05 Marks
		Program writing	10 Marks
		Error free compilation or partial output	05 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 30	Flowchart/Algorithm	10 Marks
		Program writing	10 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks

THIRD SEMESTER BCA

BCA 33 OBJECT ORIENTED PROGRAMMING WITH C++

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1 - Introduction to C++ and OOPS

08 hrs

Object Oriented Programming paradigm, Basic concepts of Object Oriented Programming-Classes, Objects, Data Abstraction and Encapsulation, Polymorphism, Inheritance, Dynamic binding, Message passing, Benefits of OOP, Object Oriented languages, applications of OOP.C++ features, Comparison with C, Structure of a C++ program, input and output statements Keywords, symbolic constants, type compatibility, declaration of variables, reference variables, operators in C++, control structures.

Unit 2 - Classes Objects and Member Functions

10 hrs

Limitations of structures in C, specifying a class, creating objects, memory allocation for objects static data members, arrays within a class, local classes. Defining member functions, call by reference, return by reference, inline functions, default arguments, making an outside function inline, nesting of member functions, private member functions, function overloading, static member functions, const member functions, pointer to members, friend and virtual functions.

Unit 3 - Constructors and Destructors

10 hrs

Introduction, constructors, parameterized constructors, multiple constructors in a class, constructors with default arguments, dynamic initialization of objects, copy constructor, dynamic constructors, constructing two dimensional arrays, const objects, destructors.

Unit 4 - Operator overloading

08 hrs

Introduction, definition, overloading unary operators, overloading binary operators, overloading operators using friends, string manipulations using operators, rules for operator overloading, type conversions.

Unit 5 - Inheritance and Templates

10 hrs

Inheritance definition, defining derived classes, types-single inheritance, making a private member inheritable, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance, virtual base classes. Template definition, class templates, class templates with multiple parameters, function templates, function templates with parameters.

Reference Books:

1. Object Oriented Programming with C++ - E Balaguruswamy
2. Object Oriented Programming in Turbo C++ - Robert Lafore
3. C++ The complete Language – Bjarne Schildt

QUESTION PAPER PATTERN**PART -I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 2
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5

BCA 34 SYSTEM SOFTWARE

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1 - Machine Architecture

08 hrs

Introduction, System software and machine architecture, Simplified Instructional Computers (SIC) and its architecture, Instruction Formats of IBM-360.

Unit 2 - Assembler

10 hrs

Introduction, General design procedure, design of Assembler, statement of problem, data Structure, Format of Data bases, Algorithm for pass 1 and pass 2, look for modularity. Explanation along with flowcharts for both pass 1 and pass 2 (detail flowchart). Table Processing :Searching & Sorting - Linear and binary search , comparison, examples. Interchange sort,, shell sort, bucket sort, radix exchange sort, address calculation sort,. Random entry searching

Unit 3 - Macro Language and macro processor

10 hrs

Introduction, Macro instructions, Features of macro facility-macro instruction arguments, Conditional macro Expansion, Macro calls within macro, Macro instruction defining macro implementation: statement of problem, Specification of databases and specification of database format, Algorithm and flowchart for processing macro definitions and macro expansion

Unit 4 - Loader

10 hrs

Introduction, Loader schemes-compile and go loader scheme, general loader, Absolute loader, Sub routine linkage, Relocating loader, Direct linking loader, overlays, Dynamic loading.

Unit 5 - Compiler

10 hrs

Introduction, Statement of problem, Phases of compiler, Lexical phase, syntax phase, interpretation phase optimization phase, storage assignment phase, code generation phase, Assembly phase, passes of compiler. Data Structures: statement of problem, storage classes and its use.

References:

1. System programming – John. J. Donovan
2. System Software – Leland L. Beck, Third edition, Addison Wesley 1997
3. Systems programming and operating systems – Dhamdare

QUESTION PAPER PATTERN**PART -I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 2
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5

BCA 35 DATABASE MANAGEMENT SYSTEM

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1 - Introduction

10 hrs

Meaning of data and information. Meaning of persistent data, definitions for DBMS, database, database system, examples, database system applications. database management system vs. file management system, views of data, data independence, data models, database languages, database users and administrators, database system structure, application architecture, advantages of using DBMS, classification of DBMS, meaning of schema and instance.

Unit 2 - E-R Model

10 hrs

Using high-level, conceptual data models for database design, basic-concepts, constraints, keys, an example database application, E-R diagram, types of entities, entity sets, attributes, types of attributes, weak entity sets, cardinality ratios (mapping cardinality), specialization, generalization

Unit 3 - Relational Model

12 hrs

Structure of relational Databases, Relational algebra - select, project. union, set difference, rename, division operations, Modification of the database, queries using relational algebra. Extended relational algebra operations. SQL- Background, basic structure, set operation, aggregate functions, NULL values, nested sub queries, Views, complex queries, Modification of the database, joined relations, Data Definition Language, domain constraints, referential integrity in SQL. Assertions, authorization, privileges in SQL, Encryption techniques.

Unit 4 - Relational Database Design

10 hrs

Pitfalls in relational data base design, Normalization for relational databases. Normal forms based on primary keys, General definitions of first, second and third normal forms, Functional Dependency (concept and example) decomposition, Boyce-Codd Normal Form - definition and example, fourth Normal form - Multi valued Dependencies - definition and example.

Unit 5 - Storage and File Structure

06 hrs

Overview of physical storage media, RAID, Organisation of records in files, Data dictionary, Ordered indices, B+ tree, introduction to transactions.

Reference Books:

1. Korth, Sudarshan “Database System concepts”, Mcgraw Hill-IV Edition.
2. Navathe, Silberchatz and Elmasri “fundamentals of database Systems”
3. Addison C.J. Date “Introduction to Database systems” Addison-wesley.
4. Bipin C Desai “Introduction to Data base system” Galgotia publications

QUESTION PAPER PATTERN**PART -I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1

Question 2 from Unit 2

Question 3 from Unit 2

Question 4 from Unit 3

Question 5 from Unit 4

Question 6 from Unit 5

Question 7 from Unit 5

BCA 36 C++PROGRAMMING LAB

PART A

1. Write a c++ program to find the result of a student using class concept
2. Define a class employee having data members name, basic salary, net salary with the member function getdata() , showdata(). Calculate the net salary assuming appropriate % for all allowance and deductions using class concept
3. Define a class to represent product details it includes data member pname, pcode, price, pquality include member function a) to get product detail b) to display the product details and total price using class concept
4. Write a c++ program to print Fibonacci series using constructor
5. Write a c++ program to find biggest of two numbers and three numbers using function overloading
6. write a c++ program to calculate area of triangle, rectangle and circle using function overloading
7. write a c++ program to calculate family income using friend function

PART – B

8. write a c++ program to add two complex numbers using operator overloading
9. write a c++ program to concatenate two string using operator overloading
10. write a c++ program to implement multiple inheritance by creating classes- father, mother and son
11. write a c++ program to swap two numbers using function template
12. write a c++ program to sort an array using function template
13. Write a c++ program to define a class Bank Account including the following class members.
DataMembers:, cust name, accno, balance.
Member Functions: a) getdata(custname,accno,balance).
b) display(accno).
c) deposit(acno,amt).
d) withdrow(accno,amt) updatation aftern checking the balance.
e) To display name & balance of all the records
14. Write a c++ program to implement multilevel inheritance by creating classes:
College—> name_id, location,dept
Student—>name ,reg_no, course, age
DOB—>date, month, year, place

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record - 10 Marks

Part –A	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	05 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 30	Program writing	20 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks

BCA 37 SQL LAB

- I. Use the default emp and dept table to write SQL statements for the following queries
1. Find the employee details in ascending order of their name and descending order of their salary
 2. Find the name of all managers and number of employees under them
 3. Find the details of all employees in the research department
 4. Find the minimum, maximum and average salary of each department
 5. Find department name having least number of employees
 6. Find the department name having highest annual payroll
 7. Add an employee under the manager smith
 8. Find the employees who are not getting commission
- II. Create tables as below
- Student(name string, regno string primary key, dob date, doj date ,course string foreign key)
- Markscard(regno foreign key, sem string, sub1 number, sub2 number, sub3 number, tot number, avge number, result string)
- Write SQL statements for the following queries.
1. List the names of students studying in BCA course in the order of their joining
 2. Find the name of student who has scored highest marks in every sem of each course
 3. Count the number of students in each course
 4. Find the course having second highest number of students
 5. Find the course having least students in I semester
 6. Display the details of student 'xxx' in every semester.
 7. Find the names of all juniors of 'yyy' in course 'c1'
 8. Find all students studying with 'xxx' and elder to him (compare DOB)
- III Dept(deptno integer pkey, dname string not null, loc string not null)
- Emp(eno integer pkey, ename string, deptno fkey, design string not null, bsal number>0)
- Salary(eno fkey, da, hra,gross,it,pf,net,comm)
- DESIGN ARE manager,clerk,salesman
- Comm=5% of basic if design=salesman otherwise null
- Da=15% bsal hra = 7% of bsal gross=bsal+da+hra
- It =0 if gross<15000
- = 10% of gross if gross between 15000 and 30000
- =20% of gross if gross between 30000 and 50000
- = 30% of gross otherwise
- pf = 10% of gross or 1000 whichever is less
- Write SQL statements for
1. Count the number of employees in every designation
 2. List the employees of every department in descending order of their net salary
 3. List the name and salary of highest salary payer in every department
 4. List the name of employee paying highest IT
 5. List the total IT paid by each department
 6. List the departments in every location
 7. Raise the basic salary by 10% for the managers of every department.
 8. Find the number of employees having atleast 10 years of experience in every department.

IV Create tables as below
Employee(eno, ename,street,city)
Company(cno,cname,city)
Works(eno,cno,sal)
Manages(mno,eno)

Write SQL statements for the following queries

1. Find the name of all employee working in the city in which they live
2. Find the company having most employee
3. Count the number of employees under each manager.
4. Find the company having second highest payroll
5. Find employee drawing more salary than his manager in every company
6. Raise the salary of every manager by 25%
7. Find name of employees who are not having managers
8. Find average, highest and lowest salary of every company

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks
Viva – voce - 10 Marks
Record - 10 Marks

Table Creation	2 Tables creation & data insertion from any two cycles	20 marks
SQL queries	2 SQL queries from I cycle and 6 SQL queries from any two other cycles for which tables created	40 marks
	Queries writing 3 marks (each)	
	Execution 2 marks (each)	

NOTE: Examiner has to ask 8 queries from two cycles in which students should answer minimum 3 queries in any one cycle

FOURTH SEMESTER BCA

BCA 43 JAVA PROGRAMMING

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Introduction to Java and Java Program Structure

10 hrs

History of Java, Java features, Difference between C/C++ and Java, Java program structure, Java tokens, Statements, JVM, Introduction to packages in Java, Applets, Operators & Expressions, Data types, Constants and Variables, Type conversions, Mathematical functions; Control Statements: Decision making and Branching with while, do-while, for and labeled loops; Arrays, Vectors & Strings: Initialization, Declaration of 1D, 2D arrays, String arrays, String methods, Vectors, Wrapper classes.

Unit 2 - Overview

10 hrs

Class, Objects, Constructor, Method overloading, Static members; Inheritance: Single, Multilevel, Hierarchical, Visibility modes, Method overriding, Final variable, Abstract methods and classes; **Interface**: Defining, Extending and Implementing assigning interface variables

Unit 3 - Packages and multithreading

10 hrs

Java API Packages, using system packages, naming convention, accessing and using a package, adding a class to packages, hiding classes. Multithreaded programming: Creating a thread, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, thread priority, synchronization, implementing the runnable interface.

Unit 4 - Exceptions and Debugging

10 hrs

Meaning of errors and exceptions, Dealing with errors, Classifications of exceptions, syntax of handling exceptions, advertising the exceptions, throwing and rethrowing exceptions, creating Exception classes, multiple catch statements, finally clause, tips for using exceptions, Debugging techniques – tricks for debugging, Assertions, Java Debugger (JDB).

Unit 5 - Applets and Graphics

08 hrs

Applets basics, applets and application, Life cycle, Life cycle of Applet programming- passing parameter to applets, paint and repaint methods, Graphics class, Line, Rectangle, Circle, Ellipse, Arcs and Polygon. Using control loops in applets, drawing bar charts.

Reference Books:

- | | |
|---------------------------------|--------------------------------|
| 1. Java, The Complete Reference | – Patrick Naughton and Schildt |
| 2. Programming in Java | – Joseph L Weber |
| 3. Java Programming | – E Balaguruswamy |

QUESTION PAPER PATTERN**PART I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 1
- Question 3 from Unit 2
- Question 4 from Unit 2 and 3
- Question 5 from Unit 3
- Question 6 from Unit 4
- Question 7 from Unit 5

BCA 44 COMPUTER GRAPHICS

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Introduction to Multimedia

10 hrs

Definition, CD-ROM and the multimedia highway, Uses of Multimedia, Introduction to making multimedia – The stages of Project, the hardware & software requirements to make good multimedia, Multimedia skills .Multimedia building blocks- SOUND: MIDI, Digital audio, audio file formats. Images: still images, color and file formats. ANIMATION: principles of animation, making animation. VIDEO: using video, how video works, and video standards.

Unit 2 - Introduction to Graphics applications

10 hrs

CAD , presentation graphics, computer art, entertainment, education and training, visualization, image processing. Display devices – raster scan displays – color CRT, DVST, LCD, 3D viewing devices. Raster scan systems, Random scan systems. List of I/O devices.

Unit 3 - Output primitives

10 hrs

Points and lines, line drawing algorithm, DDA algorithm, Bresenham's line algorithm, examples, parallel line algorithm, loading the frame buffer, circle generating algorithm, midpoint circle algorithm, ellipse generating algorithm. Pixel addressing and object geometry. Color and gray scale levels, color tables, character attributes.

Unit 4 - 2D Transformation

10 hrs

Basic Transformations- translation,. Scaling, rotation, matrix representation and homogeneous coordinates, composite transformations- translation, scaling, general pivot point and fixed point rotation, scaling directions, other transformations – reflection, shear, transformation between coordinates, inverse transformations.

Unit 5 - Windowing and Clipping

08 hrs

Introduction, the viewing transformation, viewing transformation implementation, clipping, the Cohen-Sutherland outcode algorithm, Liang-Barsky line clipping algorithm, the Sutherland-Hodgeman algorithm, the clipping of polygons and adding clipping to the system, text clipping, exterior clipping, curve clipping.

Reference Books:

1. Tay Vaughan “Multimedia – making it work”, TMH publication, fifth edition.
2. D Hearn & M P Baker: “Computer Graphics C version”, Pearson Education
3. D Newman and Sproull: “Principles of Interactive Computer Graphics -, TMH,II edition.
4. Steven Harrington “Computer graphics: A programming Approach”, TMH publication. Second edition
5. Roy plastock and Zhigang Xiang: “ Computer graphics”. Schaum’s outline series, II edition.

QUESTION PAPER PATTERN**PART I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 3
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5

BCA 45 Data Warehousing and Data Mining

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Data Warehousing and OLAP

10 hrs

Data Warehouse basic concepts, Data Warehouse Modeling, Data Cube and OLAP, Data warehouse Schemes.

Unit 2 - Data Mining

10 hrs

Introduction, Data Mining, Motivating Challenges, Data Mining Tasks, Technologies, Data Mining Applications, Data Preprocessing.

Unit 3 - Association Analysis

10 hrs

Frequent Item set Generation, Rule Generation, Compact Representation of Frequent Item sets

Unit 4 - Classification

10 hrs

Basics, General approach to solve classification problem, Decision Trees, Rule Based Classifiers, Nearest Neighbor Classifiers.

Unit 5 - Methods, Improving accuracy of Classification

08 hrs

Methods, Improving accuracy of clarification methods, Evaluation criteria for classification methods, Multiclass Problem.

Text Books:

1. Pang-Ning Tan, Michael Steinbach, Vipin Kumar: Introduction to Data Mining, Addison- Wesley, 2005.
2. G.K.Gupta: Introduction to Data Mining with Case Studies, 3rd Edition, PHI, New Delhi, 2009

Reference Books:

1. Arun K Pujari: Data Mining Techniques University Press, 2nd Edition, 2009.
2. Jiawei Han and Micheline Kamber : Data Mining-Concepts and Techniques, II Edition, Morgan Kaufmann Publisher, 2006.
3. Alex Berson and Stephen J. Smith: Data Warehousing, Data Mining, and OLAP Computing, McGrawHill Publisher, 1997.

QUESTION PAPER PATTERN**PART -I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART -II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1.

Question 2 from Unit 1

Question 3 from Unit 2

Question 4 from Unit 2 and 3

Question 5 from Unit 3

Question 6 from Unit 4

Question 7 from Unit 5

BCA 46 JAVA PROGRAMMING LAB

PART A

1. Write a Java program to generate first n odd numbers and pick and display prime numbers among them. Read value for n as command line argument.
2. Write a Java program to create a vector, add elements at the end, at specified location onto the vector and display the elements. Write an option driven program using switch...case.
3. Write a java program to find area of geometric figures (at least 3) using method overloading.
4. Write a Java program to find the circumference and area of the circle using interface.
5. Write a java program to perform matrix addition and multiplication using case statement
6. Write a java program to accept student information using array of objects and constructor initialisation.
7. Write a java program to accept student, employee information to perform relevant computation using hierarchical inheritance.

PART B

8. Write a java program to implement static and dynamic stack using interface using abstract class.
9. Write a java program to implement constructor overloading by passing different number of parameter of different types.
10. Define a package to contain the class sort to contain methods for various sorting techniques with time complexity (at least 3) Use this package to sort the list
11. Write a Java program to generate odd, even and Fibonacci numbers simultaneously using the concept of multi-threading.
12. Write a program to implement an applet by passing parameter to HTML
13. Write an applet program to display human face
14. Create an applet to display concentric n circles, input value for n.

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record - 10 Marks

Part –A	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks

BCA 47 COMPUTER GRAPHICS PROGRAMMING LAB

PART A

1. Write a program to draw borders at the four corners of the screen.
2. Write a program Write a program to implement DDA line drawing algorithm
3. Write a program to implement Bresenham's line drawing algorithm
4. Write a program to implement Bresenham's line drawing algorithm for $|m| < 1$
5. Write a program to implement Parallel line algorithm
6. Write a program to implement Mid point circle algorithm
7. Write a program to implement Ellipse generating algorithm

PART B

8. Write a program to continuously rotate an object about origin. Small angles to be used for successive rotation.
9. Write a program that applies any specifies sequence of transformations to a displayed object. The program is to be designed so that a user selects the transformation sequence and associated parameter from displayed menus, and the composite transformation is then calculated and used to transform the object. Display the original and transformed objects in different colours or different fill patterns.
10. Write a program to demonstrate clipping by defining world and viewing coordinates
11. Write a program to implement Cohen Sutherland line clipping algorithm
12. Write a program to implement Sutherland - Hodgeman polygon clipping algorithm

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record - 10 Marks

Part –A	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	05 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 30	Program writing	20 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks

FIFTH SEMESTER BCA
BCA 51 ADVANCED PROGRAMMING IN JAVA

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Review of Java Concepts and AWT, Graphics Programming

10 hrs

Review of Java Concepts .AWT and AWT Classes, Window fundamentals – Component, Container, Panel, Window, Frame, Canvas. Working with frame window. Graphics Programming: Graphics class, methods, drawing objects, line graphs, polygon classes, working with colors and fonts. Advanced graphics operations using Java2D. Designing simple User Interfaces (UIs) using AWT, Layout Manages.

Unit 2 - Swing, Event Handling and Event Handling:

10 hrs

Event Handling: Basics of Event Handling, the delegation event model, AWT event hierarchy and event classes, Event Listener Interfaces, Adapter Classes, Event queue. Swing: Meaning, need difference between AWT and swing. The Model-View-Controller (MVC) design patterns, Creating simple UIs using swing, and handling basic events.

Unit 3 - Java Beans, Java Archives (JAR)

10 hrs

Meaning and need of Java Beans, Advantages, Bean writing process, Bean properties. Java Archives (JARs): Meaning, need, the JAR utility, Creating JAR files.

Unit 4 - File Management and JDBC

10 hrs

File, creating a file, writing to a file, opening a file, reading from a file, file management, checking existence of a file, deleting a file. JDBC: Meaning, need, concept and structure of JDBC, relation with ODBC, JDBC driver types and their meaning, the JDBC process – loading the driver, connecting to the DBMS, creating and executing SQL statement, Connection object, Statement object, Prepared Statement object, Callable Statement, Result Set, JDBC Exceptions.

Unit 5 -Fundamental concepts of Collections, Generics and Network programming 08 hrs

Collections: Meaning, need, Collection interfaces, Concrete Collections – Array List, Hash set, Map. Generics: Meaning, need, benefits, generics usage, basics of generic types, type parameter naming conventions, type wildcards, using type wildcards, generic methods, bound types, writing simple generic container, implementing the container, implementing the constructors, implementing generic methods. Network programming: Meaning of Client, Server, Socket, port. Creating a client socket, creating a server socket, writing simple server and client.

Reference books:

1. The Complete Reference – Java 2: Herbert Schildt, 5th Edition, Tata McGraw-Hill
2. Thinking in Java: Bruce Eckel
3. Core Java 2: Volume I – Fundamentals: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.
4. Core Java 2: Volume II – Advanced Features: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.

QUESTION PAPER PATTERN**PART I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 2
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5

BCA 52 Data Communication

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Introduction to Data Communication

08 hrs

Communication model & Data Communication networking -types. Data Transmission- Transmission terminology, Analog & Digital data transmission, Transmission impairments – attenuation, delay distortion & noise.

Unit 2: Data Transmission media

10 hrs

Guided Transmission- types- Twisted pair, coaxial cable & optical fiber – physical description, application & characteristics. Unguided Transmission- wireless transmission: types- Terrestrial type, Satellite, Broadcast radio – physical description, application & characteristics.

Unit 3: Data encoding

10 hrs

Basics, types and description of different signals, Digital data & digital signals: NRZ, multilevel binary, Bi phase techniques. Digital data & Analog signals: Encoding techniques- ASK, FSK, PSK Analog data & Digital signals: PCM & delta modulation Analog data & Analog signals: Modulation- AM & FM Spread spectrum: Frequency hopping, direct sequence Asynchronous & synchronous transmission: Line configurations- full duplex & half duplex.

Unit 4 - Data link control & medium access sub

10 hrs

Flow control: Stop and wait & sliding window flow control. Error detection: Parity check, CRC Error control: Stop and wait ARQ, Go Back-N ARQ High-level data link control: basics, Characteristics, frame structure, operation Medium access sub layer- the channel allocation problem. Multiple access Protocol-ALOHA, carriers sense multiple access protocol, collision free protocol.

Unit 5 - Multiplexing and Switching

10 hrs

Frequency division multiplexing- characteristics, analog carrier systems, Time division multiplexing- characteristics, link control. Digital carrier system, ISDN user network interface. Circuit switching networks- switching concept, space division & time division switching- Packet switching networks-principles, switching technique, and packet size. Comparison of Circuit switching & Packet switching

Reference books:

1. Data and Computer Communications – William Stallings.
2. Computer Networks – Andrew S. Tanenbaum.
3. Data Communication – Ulysis D Black.
4. Data Communication and Networking – Behrouz A. Forouzan.
5. Internetworking with TCP/ IP – Douglas E comer, PHI

QUESTION PAPER PATTERN**PART I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 3
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5

BCA 53 Web programming with J2EE Concepts and PHP

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 – Introduction

08hrs

Internet, WWW, Web Browsers and Web Servers, URLs, HTTP, Evolution of the Web, Peak into the History of the Web, Internet Applications, Important Components of the Web, Web Search Engines, Application Servers. HTML and DHTML Concepts : Programming structure, different basic tags , Images, Hyper text Links. Lists, Tables, Forms, Frames. Cascading Style Sheets: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The box model, Background images, The and <div> tags.

Unit 2 – The JavaScript

10 hrs

Overview of JavaScript, Execution Environment, Object orientation and JavaScript, Syntactic characteristics, Primitives, operations, and expressions, Arrays, Functions, Pattern matching using regular expressions, Examples. Events and Event Handling,

Unit 3 – Client – Server Systems

10 hrs

Meaning of client and server, Client-Server architecture, benefits, concept of ports and sockets. Protocol – Meaning, definition, examples, meaning of stateless and state (state full) protocols. HTTP protocol – meaning, http protocol request and response header formats, status codes. Client-Server communication scenario.

Unit 4 – JEE Technology Concepts

10 hrs

Multi-tier architecture for application development – Meaning, need, advantages. Meaning of enterprise application and web application, various tiers in enterprise application – client tier, web tier, business tier, enterprise information system tier. Introduction to JEE concepts – Need, advantages, characteristics of JEE technology, the concepts of containers, components and services – meaning of web container, application client container, EJB container.

Unit 5 – Basics of PHP and Java Server Pages Programming Concepts

10hrs

Introduction to JSP - language structure, advantages, characteristics, comparison between Java and Java Server Pages. Various aspects of Java Server Pages programs, writing and executing JSP programs. Writing dynamic programs using JSP. Database programming through JSP. Basics of PHP : Introduction ,variables ,functions, sessions, date, mysql integrations with php, file uploading.

Reference books:

1. The Complete Reference – J2EE – Jim Keogh
2. J2EE – Kevin Mukhar, James L. Weaver, James P Crume, Ron Phillips
3. learning php and mysql 4th Edition Robin Nixon.
4. Begining php-5 and Mysql Cristian Darie.

QUESTION PAPER PATTERN**PART I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1.

Question 2 from Unit 1

Question 3 from Unit 2

Question 4 from Unit 3

Question 5 from Unit 4

Question 6 from Unit 5

Question 7 from Unit 5

BCA 54 OPERATING SYSTEM

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 – Introduction

10 hrs

Definition of Operating System, need. Early systems – Simple monitors, Batch Systems. Multiprogramming, Time Sharing, Real time, Parallel and Distributed systems. Special Purpose Systems – Real Time Embedded Systems, Multimedia Systems, Handheld Systems. Computing Environments – Traditional, Client Server, Peer-to-Peer and Web based. Open Source Operating Systems.

Unit 2 – Process Management

10 hrs

Process concept – meaning of process, sequential and concurrent processes, process state, process control block, threads, Process scheduling – scheduling queues, schedulers, context switch. Operations on Processes – creation and termination. Inter process communication – Independent and co-operating processes. Communication in client-server systems – RPC and RMI. Process scheduling – Basic concepts

Processor - CPU I/O burst cycle, CPU Scheduler, Preemptive scheduling, dispatcher. Scheduling criteria, Scheduling algorithm – First-Come-First-Served (FCFS), Shortest Job First (SJF), Priority Scheduling, Round Robin. Multi-level queue scheduling (Concepts only), multi-level feedback queue scheduling (Concepts only). Multiple processor scheduling, Real time scheduling.

Unit 3 – Deadlocks

10 hrs

Definition with example, System model, Dead lock characterization – Necessary Conditions, Resource Allocation Graph, Dead lock prevention, Avoidance and detection, Recovery from dead lock.

Unit 4 – Memory Management

10 hrs

Logical and Physical address space, Swapping, Contiguous allocation, Paging, Segmentation, Virtual memory - demand paging and its performance, Page replacement algorithms, Allocation of frames, Thrashing.

Unit 5 – Disk and File Management

08 hrs

Secondary Storage Structure and Disk Management: Disk structure & scheduling methods, Disk management, disk reliability. File concepts, Access methods, Directory structure, Protection and consistency semantics, File system structure, Allocation methods, free space management.

References:

1. Abraham Silberschatz and Peter Baer Galvin, Operating System Concepts, Fifth edition, Addison - wesley 1989.
2. Milan Milonkovic, Operating System Concepts & Design, II Edition, McGraw Hill 1992.
3. Stallings, Operating Systems, Pearson Edition.
4. Tanenbaum, Operating System Concepts, Pearson Education
5. Nutt : Operating System, 3/e Pearson Education 2004

QUESTION PAPER PATTERN**PART -I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 2
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5

BCA 55 SOFTWARE ENGINEERING

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 – Introduction

10hrs

Definition of software, software problems (industrial strength software, software is expensive, late and unreliable maintenance and rework), software engineering challenges (scale, quality and productivity, attributes), software engineering approach (phased development process, managing process, components).

Unit 2 – Software processes

10hrs

Introduction to software process (processes and process modules, component of software process), characteristics of software process (predictability, support testability and maintainability, support change, early defect removal, process improvement and feedback), software process models (waterfall, prototype, iterative enhancement model, spiral, comparison of process models).

Unit 3 – Software Planning

10hrs

Introduction to planning, effort estimation (uncertainties, building efforts, bottom-up, COCOMO model), project scheduling and staffing (overall, detailed scheduling, team structure), risk management (concepts, assessment), project monitoring plan (measurements, project monitoring and tracking).

Unit 4 – Analysis and Design

10hrs

Software requirements (needs and requirement process), problem analysis (informal approach, data flow modeling, object oriented modeling, prototyping), requirement specification (characteristics of SRS, components of SRS, specification language, structure of requirement document), validation. Design: Function oriented design: design principles, module level concept (coupling, cohesion), structure design methodology (DFD, first level factoring).

Unit 5 -Coding and Testing

08 hrs

Coding: programming principles and guidelines (common coding errors, structured programming, information hiding, some programming practices, coding standards), refactoring (basic concepts with examples, common refactoring), verification (code inspections, static analysis, proving correctness, unit testing). Testing: testing fundamentals, black box and white box testing, comparison between black box and white box testing, testing process (levels of testing, test plan).

Reference books:

1. An integrated approach to software engineering-Pankaj Jalote.
2. Roger Pressman, Software Engineering- A Practitioner's Approach TMH
3. Ian Sommerville, Software Engineering, Pearson Publications Ltd.

QUESTION PAPER PATTERN**PART I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.
The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5

BCA 56 WEB PROGRAMMING LAB WITH J2EE CONCEPTS AND PHP

Part – A

1. Create a webpage using html to display college information with appropriate images and list of departments.
2. Create a webpage using html to display the below mentioned table (use appropriate colors):

Name		Place
Rama	R	Bhadravathi
Kumar	B	Shimoga
Rajesh	S	Thirthahalli
Ramakrishna	RK	Bhadravathi

3. Create a webpage with two images which alternately changes on mouse over using CSS.
4. Create a webpage to display system date in the given format: Ex: 01 January 2016
5. Create a webpage to demonstrate the use of external Cascading Style Sheets
6. Create a webpage to demonstrate the use of span and div tags in DHTML.
7. Create a webpage with two textboxes and command buttons to perform arithmetic operations and display the result in appropriate dialog boxes using JavaScript.
8. Create a webpage to convert a given text from uppercase to lowercase using JavaScript.

Part – B

9. Write a JSP application to read the details of a student and store the same on to the MS Access database.
10. Write a JSP application to evaluate the salary details of an employee and store the same in the MS Access database table.
11. Write a multilayered JSP program to evaluate the result of a student. Consider student name, register number, marks obtained in 5 subjects as input and read them by writing a proper user interface JSP. Evaluate the total marks, percentage marks and grade by writing a process JSP. While evaluating the grade verify whether the student has cleared all the papers. Display the output with proper marks list format by using <TABLE> tag.

College Name

Marks List

Name of the Student :

Register Number :

Subjects	Max. Marks	Min. Marks	Marks Obtained
1. Subject1	100	40	--
2. Subject2	100	40	--
3. Subject3	100	40	--
4. Subject4	100	40	--
5. Subject5	100	40	--
Total Marks	500	200	--
Percentage Marks:	-- %		
Grade:	----		

12. Write a multilayered JSP application to accept and store student information. Accept student name, register number, course, combination, semester, marks obtained in five subjects as input through a proper user interface page. Design course, combination and semester as combo boxes. Store the accepted details in the MS Access table.
13. Write a multilayered JSP application to read and store employee information. Read employee name, employee identification number, Department, Designation, Basic Salary, TA, DA, HRA, PF, LIC (in percentage) as input through a proper user interface page. Also calculate TA Amount, DA Amount, HRA Amount, PF Amount, LIC Amount, Total Allowances, Total Deductions, Gross Salary and Net Salary components of the employee. Along with the employee information store the salary details in the MS Access table.
14. Write a program to connect the mysql-database and display connection status using PHP.
15. Write a program to upload and display an image using PHP.

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record 10 Marks

Part –A	One Program Max marks 25	Program writing	15 Marks
		Error free compilation or partial output	05 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 35	Program writing	20 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks

BCA 57 ADVANCED JAVA PROGRAMMING LAB

Part A

1. Write an Applet program to design a user interface to key-in the details of an employee.
2. Write an applet to add, remove, select an item in a list
3. Write a applet display select geometric figure from a list.
4. Write a program to implement mouse events
5. Write a program to implement keyboard events
6. Write a Java program (console) to store the typed text to a file.
7. Write a Java program to display the content of a file.
8. Write a Java program to edit the content of a file.

Part B

9. Write a Java program with JDBC to store the details of a person on to an Oracle database table.
10. Write a Java program with JDBC to access and display the details of a person stored in an Oracle database table.
11. Write a Java program with JDBC to access and delete the details of a given person stored in an Oracle database table.
12. Write a Java GUI program to accept the details of an employee and store the same on to an Oracle database table.
13. Write a Java GUI program to access and display the details of a given employee stored in Oracle database table.
14. Write a Java program to design a simple Client and Server components. Pass simple text (static) from client to the server and a receipt acknowledgement (static) back to the client.
15. Write a Java program to demonstrate the use of generics.

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record 10 Marks

Part –A	One Program Max marks 25	Program writing	15 Marks
		Error free compilation or partial output	05 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 35	Program writing	20 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks

SIXTH SEMESTER BCA

BCA 61 COMPUTER NETWORKS

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Basics

10 hrs

Uses of computer networks, network hardware- broadcast networks, point – to -point networks, network software-protocol hierarchies, design issues, interface & services, connection oriented & connection less services, service primitives

Unit 2: Reference models

10 hrs

OSI reference model- description of each layer. TCP/IP reference model, comparison of the two models, Critique of the OSI model and protocols, Critique of the TCP/IP model and protocols, Example networks-ARPANET,ATM.

Unit 3: The network layer

10 hrs

Design issues, routing algorithms- the optimality principle, shortest path routing, distance vector routing, and link state routing. Congestion control algorithms- general principle, Congestion prevention policies, traffic shaping. The network layer in the internet - the IP protocol, IP address, and subnet. Internet control protocol.

Unit 4: The transport layer

10 hrs

The transport service- services provided to the upper layer, quality service, and transport service primitives. Elements of transport protocol - addressing, establishing a connection, releasing a connection. A simple transport protocol- the example service primitives, the example transport entity. The Internet transport protocol (TCP & UDP)- the service model, the TCP segment header, the TCP connection management. UDP - header.

Unit 5: The Application layer

08 hrs

Network security - traditional cryptography, two fundamental cryptographic principles, secret key & public key algorithms. DNS - Name space, SNMP - model. Electronic mail, architecture and services, www.

Reference books:

1. Data and Computer Communications – William Stallings.
2. Computer Networks – Andrew S. Tanenbaum.
3. Data Communication – Ulysis D Black.
4. Data Communication and Networking – Behrouz A. Forouzan.
5. Internetworking with TCP/ IP – Douglas E comer, PHI

QUESTION PAPER PATTERN**PART I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks .Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 2 and 3
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 4
- Question 7 from Unit 5

BCA 62 DOT NET PROGRAMMING

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Introduction to C# & .NET platform and Building C# Applications 08hrs

Introduction to C# and .NET platform : .NET solution, Building blocks of the .NET platform(CLR, CTS, CLS), Role of .NET base class libraries, .NET Aware programming languages, role of common intermediate languages & type metadata and assembly manifests, A tour of the .NET namespaces.

Building C# Applications : Role of the command line compiler(csc.exe), Building a C# application using csc.exe, the command line debugger(cordbg.exe), using the visual studio .NET IDE & its debugging, C# "pre-processor" directives.

Unit 2 - C# language fundament mentals 10hrs

Anatomy of a basic C# class, creating objects: constructor basics, Default assignments & variables scope, variables initialization syntax, basic inputs & output with the console class, understand static methods, arrays & string manipulations, Encapsulation Services, Class Properties , Read and Write only Properties, Static Properties, Inheritance Is As keyword Usage, Controlling Base Class Creation With Base, Sealed Classes, Delegation , Polymorphism, The Virtual and Override Keywords ,Abstract Classes, Abstract Methods

Unit 3 - Exception & object life time and Interface and Collections 10hrs

Exception & object life time :The Basics of Object Life Time, The Role Of Application Roots, Understanding Object Generations, The Role Of .NET Exception Handling ,Throwing a Generic Exception ,Catching Exceptions, Properties of Exception, Multiple Exception (Concepts Only),The Finally Block

Interface & Collections : Definition, Implementing an Interface in C#, Interface members at object level, Interface as Parameters, Interface as Return Values, Arrays of Interface Types, Interface Hierarchies, Interface as polymorphic agents, Exploring the system. collections Namespaces.

Unit 4 - Introducing windows forms 10hrs

Overview of the system. windows. Forms Namespaces, An Anatomy of a Form, A Simple Form Program, Function with Control Class, The Functionality Of the Form Class, Component class, control class, Programming with windows forms controls : Working with Button types, Check Boxes, Radio Buttons, Group Boxes, List Boxes, Calender control, assigning tool tips for controls.

Unit 5 - Data access with ADO.NET

10hrs

The Two Faces Of [ADO.NET](#), Understanding ADO.NET Data Providers, Understanding The Connected Layer of ADO.NET, Working with Connection Object, Inserting, Updating and Deleting Records

References Book:

- 1 Pro C# with .NET 3.0 ----- Andrew Troelsen
- 2 C# Programming ----- E Balaguruswamy

QUESTION PAPER PATTERN

PART I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART II 75 Marks There shall be 07 questions carrying equal 15 Marks.

Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1.

Question 2 from Unit 1

Question 3 from Unit 2

Question 4 from Unit 3

Question 5 from Unit 3

Question 6 from Unit 4

Question 7 from Unit 5

BCA 63 UNIX Operating System

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Introduction

08 hrs

The Unix operating system, , A brief Session, The Unix Architecture, Features of UNIX, POSIX and Single UNIX specification, Locating commands, Internal and External commands, Command Structure, Flexibility of command Usage, Man Browsing the Manual Pages ON-line, Understanding the man Documentation. General-Purpose Utilities: Cal command, date command, echo, printf, bc, script, passwd, who, uname.

Unit 2 - The File System

10 hrs

The file, The Parent –Child Relationship, The HOME Variable, pwd, cd, mkdir, rmdir, Absolute Pathname, Relative Pathname, ls, The Unix File system. Handling Ordinary Files: Cat, cp, rm, mv, more, The lp subsystem: Printing a File, File, wc, od, cmp, comm, diff, dos2unix and unix2dos, compressing and archiving files, gzip, and gunzip, tar, zip and unzip.

Basic File Attributes: Listing file attributes, listing directory attributes, File Ownership, File Permissions, changing file permissions, Directory Permissions, Changing File Ownership.

Unit 3 - The Vi Editor

10 hrs

Vi basics, Input Mode, Saving Text and Quitting, Navigation, Editing Text, Undoing Last Editing Instructions(U and U), Repeating the last command(.), Searching for a Pattern(/ and ?), Substitution.

Unit 4 - The process

10 hrs

Process basics, process status, system process, Mechanism of process creations, Internal and external commands, process states and zombies, running jobs in background, nice, killing process with signals, job control, at and batch, cron, timing process.

Simple filters: The sample database, pr, head, tail, cut, paste, sort, uniq, tr, displaying a word-count list. Filters using regular expressions: grep, basic regular expressions, extended regular expressions.

Unit 5 - The Shell

08 hrs

The shell's Interpretive Cycle, Shell Offering, Pattern Matching, Escaping and Quoting, Redirection, /dev/null and /dev/tty, Pipes, tee, Command Substitution, Shell variables. Essential shell programming: Shell scripts, read, using command line arguments, exit and exit status of command, the logical operators && and ||- conditional execution, the if conditional, using test and to evaluate expressions, the case conditional, expr, \$0: calling a script by different names, while, for, set and shift, the here document (<<), trap, debugging shell scripts with set -x, sample validation and data entry scripts.

References :

1. Sumitabha Das, UNIX System V.4, Concepts and Applications, TMH

QUESTION PAPER PATTERN**PART I 05 Marks**

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 2

Question 4 from Unit 3

Question 5 from Unit 4

Question 6 from Unit 4

Question 7 from Unit 5

BCA 64 UNIX LAB

PART A

1. Write a shell script to count the number of characters in a given string.
2. Write a shell script program to perform all arithmetic operation on floating point
3. Write a shell script program to check whether the given no. is positive or negative.
4. Write a shell script program to find area of a square, rectangle, circle and triangle.
5. Write a shell script program to reverse a number.
6. Write a shell script program to find sum of digit of a no.
7. Write a shell script program to add, subtract, multiply the two given numbers passed as command line arguments.
8. Write a shell script program to read data from command line argument and print 1st and 2nd command line argument and print how many no. of argument user has given.

Part – B

1. Write a shell script program to read pattern and file name and search whether the given pattern is present in a file or not, with suitable validation.
2. Write a shell script program to check whether the given file is present in a directory and check what are all the permission given for the owner.
3. Write a shell script program to read filename from command line argument and check whether the file is regular file or directory or by both.
4. Write a shell script program to read 2 filename and check which 1 is newer and which 1 is older.
5. Write a shell script program to find the number of directory files and ordinary files in the current directory.
6. Write a shell script program to perform the following any 1 operation based on your own
 - a. choice.
 - b. show first 5 line data
 - c. show last 3 line data
 - d. sort the data
 - e. find out word count

7. Write a shell script program to perform the following any 1 operation on your own choice.

- a. list the file
- b. process the user
- c. today's date
- d. user of the system
- e. exit

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record 10 Marks

Part –A	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks

BCA 65 PROJECT LAB

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 3 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- ☐ Title
- ☐ Objectives
- ☐ Input and output
- ☐ Details of modules and process logic
- ☐ Limitations of the project
- ☐ Tools/platforms, Languages to be used
- ☐ Scope of future application

For the project work, the guide(internal) evaluate the work for 20 marks based on the performance of the candidates during the development of the project and the external examiner will evaluate the project work as follows:

- ☐ Project Report - 20 marks
- ☐ Project Demo -30 Marks
- ☐ Viva-Voce - 30 marks

The Project work should be either an individual one or a group of not more than five members.

FIRST SEMESTER BSc

Computer Science -I

BCS-1 Computers Fundamentals and C Programming

Theory Examination- 50 Max marks.
Internal Assessment- 10 Max marks

Number of Teaching hours –48

Unit 1- Introduction to Computer Systems:

15hrs

Definition of a Computer, History of Computers, Generations of Computers, types of computer – based on size and working principle, Block diagram of a Computer with functional units(explanation), Parts of a computer system, Information processing Cycle. Definition of software and hardware, types of programming languages, assembler, compiler, interpreter, linker, loader (Definitions only), number system – decimal, binary, octal and hexadecimal number, interconversion of decimal to binary and vice-versa. ASCII codes. Algorithm-definition, Characteristics, notations. Flowchart-definition, Symbols used in writing the flow-chart Writing an algorithm and flow-chart of simple problems.

Unit 2- Introduction to Computer Systems:

06hrs

Introduction to C, features C, basic C program structure, character set, tokens, keywords and identifiers. Constants, variables, data types, variable declaration, symbolic constant definition.

Unit 3- Operators and Expressions:

06hrs

C operators- arithmetic, relational, logical, bitwise, assignment, increment and decrement, conditional (?:) and special operators, Arithmetic expressions, precedence of operators and associativity. Type conversions, mathematical functions. Definition of macro and pre-processor directives, Managing I/O operation – reading and writing a character, formatted and unformatted I/O functions.

Unit 4- Control Structures:

10hrs

conditional control statements- if, if-else, nested if, switch, go to statement, while, do-while and for statements. Unconditional control statements- break, continue and return statements (definition and explanation with syntax, flowchart and examples)

Unit 5- Arrays, Strings and Functions:

10hrs

Definitions of an array, types-one and two dimensional array, (definition, declaration, initialization with examples). **Strings**—definition, declaration and initialization of string variable, string handling functions- strcmp, strcpy, strlen, strrev, strlwr,strupr (explanation with syntax and examples) Functions – definition, need, syntax for function declaration, function prototype, category of functions, nesting of functions, function with arrays, scope of variables, parameter passing mechanism- call by value and call by reference. Recursion and Recursive function (definitions only)

Reference :

1. Fundamentals of Computers, V. Rajaraman.
2. Computer Concepts and C Programming, P.B. Kotur
3. Let us C, Yashwanth Kanetkar
4. ANSI C, Balagurusamy

QUESTION PAPER PATTERN

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions each carrying 05 Marks. Each question may contain sub questions-(a) and (b), The student has to attend only 03 questions.

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 3
- Question 4 from Unit 4
- Question 5 from Unit 5

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

- Question 1 from Unit 1 & Unit 3.
- Question 2 from Unit 4
- Question 3 from Unit 5

PRACTICAL: C- PROGRAMMING LAB

1. Find the biggest of three numbers.
2. Arithmetic operations using switch statement.
3. Find the Fibonacci series between M and N.
4. Prime numbers between M and N
5. Binary to Decimal conversion
6. Sorting an unsorted array
7. Searching an element in an array.
8. Addition of two matrices
9. Multiplication of two matrices
10. Norm and trace of the matrix.
11. Count the numbers of vowels in a given string.
12. Find the factorial of a number using function.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Flowchart/Algorithm 05 Marks
 - ✓ Program Writing 15 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

SECOND SEMESTER BSc

Computer Science -II

BCS-2 Data Structures using C

Number of Teachinghours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

Unit 1– Introduction to Data Structures, Structure and Union **08hrs**

Pointers–Definition, Declaration, Examples and usage. Static / dynamic memory allocation. Structure–Definition, declaration, accessing structure members. Union – Definition, declaration, Differences between structures and union . Definition of Data Structure and types with examples.

Unit 2- Stack **6hrs**

Definition and example, operations, representation of stack in C, applications of stack, evaluation of postfix expression, conversion from infix to postfix. Recursion –Tower of Hanoi, Factorial, GCD.

Unit 3- Queues and lists **10hrs**

Definition and example, operations on queue, types of queue, sequential representation, disadvantages of ordinary queue, circular queue and priority queue(concepts only).Linked list–Definitions and types of lists ,operations on SLL, stack and queue implementation using linked list, circular and doubly linked list (concepts only).

Unit 4- Trees **10hrs**

Tree definition, representation, types of tree, Tree terminologies with an example, Binary tree,linked list representation of binary tree, tree traversals,binary search tree(definition only) and its applications.

Unit 5- Searching and sorting **10hrs**

Searching technique- sequential, Binary search, interpolation, binary tree searching definition of Sorting definition and its types –radix sort, quick sort, shell sort,heapsort,binary tree sort.

References:

1. Systematic approach to data structure Padmareddy
2. Programming in ANSI C - E. Balagursamy
3. Datastructures and programming design using C - Robert Kruse PIII publications
4. Datastructures and applications - Trembly and Sorenson

QUESTION PAPER PATTERN

PART- I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART -III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART- IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 2 & Unit 5.

Question 2 from Unit 3

Question 3 from Unit 4

PRACTICAL DATA STRUCTURES LAB

1. Implementation of stack
2. Evaluation of postfix expression
3. Conversion of infix to postfix
4. Tower of Hanoi
5. Implementation of queue
6. Implementation of stack/queue using linked list
7. Binary tree traversals
8. Quick sort
9. Heap sort
10. Tree sort
11. Shell sort
12. Binary search

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Writing 20 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

THIRD SEMESTER B Sc

Computer Science -III

BCS-3 Object Oriented Programming with C++

Number of teaching hours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

Unit 1: Introduction to C++ and OOPS:

12hrs

Object Oriented Programming paradigm, Basic concepts of Object Oriented Programming- Classes, Objects, Data Abstraction and Encapsulation, Polymorphism, Inheritance, Dynamic Binding, Message passing, Benefits of OOP, Object Oriented languages, applications of OOP.C++ features, Comparison of C++ with C, Structure of a C++ program, input and output statements, Keywords, symbolic constants, type compatibility, declaration of variables, reference variables, operators in C++, control structures.

Unit 2 : Classes Objects and Member Functions:

15hrs

Limitations of structures in C, specifying a class, creating objects, memory allocation for objects, static data members, arrays within a class, local classes. Defining member functions, call by reference, return by reference, inline functions, default arguments, making an outside function inline, nesting of member functions, private member functions, function overloading, static member functions, const member functions, pointer to members, friend and virtual functions.

Unit 3 : Constructors and Destructors:

06hrs

Introduction, constructors, parameterized constructors, multiple constructors in a class, constructors with default arguments, dynamic initialization of objects, copy constructor, dynamic constructors, constructing two dimensional arrays, const objects, destructors.

Unit 4 : Operator overloading:

05hrs

Introduction, definition, overloading unary operators, overloading binary operators, overloading operators using friends, string manipulations using operators, rules for operator overloading, type conversions.

Unit 5 : Inheritance and Templates:

10hrs

Inheritance definition, defining derived classes, types-single inheritance, making a private member inheritable, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance, virtual base classes. Template definition, class templates, class templates with multiple parameters, function templates, function templates with parameters.

Reference Books:

1. Object Oriented Programming with C++ - E balaguruswamy
2. Object Oriented Programming in Turbo C++ - Robert Lafore
3. C++ The complete Language – BjarneSchildt

QUESTION PAPER PATTERN

PART- I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART- II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1 & Unit 2.

Question 2 from Unit 3 & Unit 4.

Question 3 from Unit 5

PRACTICAL: C++ LAB

1. Write a c++ program to find the result of a student using class concept
2. Define a class employee having data members name, basic salary, net salary with the member function getdata(), showdata(). Calculate the net salary assuming appropriate % for all allowance and deductions using class concept
3. Define a class to represent product details it includes data member pname, pcode, price, pquality include member function a) to get product detail b) to display the product details and total price using class concept
4. Write a c++ program to print Fibonacci series using constructor
5. Write a c++ program to find biggest of two numbers and three numbers using function overloading
6. write a c++ program to calculate area of triangle, rectangle and circle using function overloading
7. write a c++ program to calculate family income using friend function
8. write a c++ program to add two complex numbers using operator overloading
9. write a c++ program to concatenate two string using operator overloading
10. write a c++ program to implement multiple inheritance by creating classes: Father , Mother and Son
11. write a c++ program to swap two numbers using function template
12. write a c++ program to sort an array using function template

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Writing 20 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

FOURTH SEMESTER BSc

Computer Science -IV

BCS-4: Database Management System

Number of Teaching hours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

Unit 1: Introduction to DBMS

10hrs

Meaning of data and information. Meaning of persistent data, definitions for DBMS, database, database system, examples, database system applications. database management system vs. file management system, views of data, data independence, data models, database languages, database users and administrators, database system structure, application architecture, advantages of using DBMS, classification of DBMS, meaning of schema and instance.

Unit 2: E-R Model

10hrs

Using high-level, conceptual data models for database design, basic-concepts, constraints, keys, an example database application, E-R diagram, types of entities, entity sets, attributes, types of attributes, weak entity sets, cardinality ratios (mapping cardinality), specialization, generalization.

Unit 3: Relational Model

10hrs

Structure of relational Databases, Relational algebra - select, project. union, set difference, rename, division operations, Modification of the database, queries using relational algebra. Extended relational algebra operations.

Unit 4: SQL

10hrs

Background, basic structure, set operation, aggregate functions, NULL values, nested sub queries, Views, complex queries, Modification of the database, joined relations, Data Definition Language, domain constraints, referential integrity in SQL Assertions, authorization, privileges in SQL.

Unit 5: Relational Database Design:

08hrs

Pitfalls in relational data base design, Normalization for relational databases. Normal forms based on primary keys, General definitions of first, second and third normal forms, Functional Dependency (concept and example) decomposition, Boyce-Codd Normal Form -

definition and example, fourth Normal form - Multi valued Dependencies - definition and example.

Reference Books:

1. Korth, Sudarshan "Database System concepts", Mcgraw Hill-IV Edition.
2. Navathe, Silberchatz and Elmasri "fundamentals of database Systems"-Addison Wesley-2004
3. C.J. Date "Introduction to Database systems" Addison-wesley.
4. Bipin C Desai "Introduction to Data base system" Galgotia publications

QUESTION PAPER PATTERN

PART- I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART- II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART -III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART- IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1.

Question 2 from Unit 2 & Unit 3

Question 3 from Unit 4 &Unit 5

PRACTICAL: SQL LAB

- I. Use the default emp and dept tables to write SQL statements for the following queries
1. Find the employee details in ascending order of their name and descending order of their salary
 2. Find names of all employees whose name starts with 's' and having at least 6 characters in it
 3. Find the name of all managers and number of employees under them
 4. Find the details of all employees in the research department
 5. Find the minimum, maximum and average salary of each department
 6. Find department name having least number of employees
 7. Find the department name having highest annual payroll
 8. Add an employee under the manager smith
 9. Find the employees who are not getting commission

II. Create tables as below

Student(name string, regno string primary key, dob date, doj date, course string foreign key)

Markscard(regno foreign key, sem string, sub1 number, sub2 number, sub3 number, tot number, avge number, result string)

Write SQL statements for the following queries.

1. List the names of students studying in BCA course in the order of their joining
2. Find the name of student who has scored highest marks in every sem of each course
3. Count the number of students in each course
4. Find the course having second highest number of students
5. Find the course having least students in I semester
6. Raise the marks of sub3 in III sem BCA students by 5% if the student has failed in that subject
7. Display the details of student 'xxx' in every semester.
8. Find the names of all juniors of 'yyy' in course 'c1'
9. Find all students studying with 'xxx' and elder to him (compare DOB)

III. Dept(deptno integer pkey, dname string not null, loc string not null)

Emp(eno integer pkey, ename string, deptno fkey, desgn string not null, bsal number > 0)

Salary(enofkey, da, hra, gross, it, pf, net, comm)

DESIGN ARE manager, clerk, salesman

Comm=5% of basic if desgn=salesman otherwise null

Da=15% bsal
hra = 7% of bsal
gross=bsal+da+hra

It =0 if gross<15000

= 10% of gross if gross between 15000 and 30000

=20% of gross if gross between 30000 and 50000

= 30% of gross otherwise

pf = 10% of gross or 1000 whichever is less

Write SQL statements for

1. Count the number of employees in every designation
2. List the employees of every department in descending order of their net salary
3. List the name and salary of highest salary payer in every department
4. List the name of employee paying highest IT
5. List the total IT paid by each department
6. List the departments in every location
7. Raise the basic salary by 10% for the managers of every department.
8. Find the number of employees having at least 10 years of experience in every department.
9. Count the number of employees who are not getting commission in every department

PRACTICAL EXAM SCHEME

Practical Proper - 30 Marks

Viva – voce - 05 Marks

Record - 05 Marks

Table Creation	Table creation & data insertion	10 marks
	4 SQL queries	20 marks
SQL queries	Queries writing 3 marks (each)	
	Execution 2 marks (each)	

(NOTE: Examiner has to ask 6 queries from a cycle in which student should answer 4 queries in the given cycle)

FIFTH SEMESTER BSc

Computer Science -V

BCS-5 JAVA Programming

Number of teaching hours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

1. Introduction to Java and Java Program Structure

15hrs

History of Java, Java features, Difference between C/C++ and Java, Java program structure, Java tokens, Statements, JVM, Introduction to packages in Java, Applets, Operators & Expressions, Data types, Constants and Variables, Type conversions, Mathematical functions; Control Statements: Decision making and Branching with while, do-while, for and labeled loops; Arrays, Vectors & Strings: Initialization, Declaration of 1D, 2D arrays, String arrays, String methods, Vectors, Wrapper classes.

2. Overview

10hrs

Class, Objects, Constructor, Method overloading, Static members; Inheritance: Single, Multilevel, Hierarchical, Visibility modes, Method overriding, Final variable, Abstract methods and classes; Interface: Defining, Extending and implementing assigning interface variables

3. Packages and multithreading

10hrs

Java API Packages, using system packages, naming convention, accessing and using a package, adding a class to packages, hiding classes. Multithreaded programming: Creating a thread, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, thread priority, synchronization, implementing the runnable interface.

4. Exceptions and Debugging:

08hrs

Meaning of errors and exceptions, Dealing with errors, Classifications of exceptions, syntax of handling exceptions, advertising the exceptions, throwing and re-throwing exceptions, creating Exception classes, multiple catch statements, finally clause, tips for using exceptions, Debugging techniques – tricks for debugging, Assertions, Java Debugger (JDB).

5. Applets and Graphics:

05hrs

Applets basics, applets and application, Life cycle, Life cycle of Applet programming- passing parameter to applets, paint and repaint methods, Graphics class, Line, Rectangle, Circle, Ellipse, Arcs and Polygon. Using control loops in applets, drawing bar charts.
Reference Books:

- | | |
|---------------------------------|--------------------------------|
| 1. Java, The Complete Reference | – Patrick Naughton and Schildt |
| 2. Programming in Java | – Joseph L Weber |
| 3. Java Programming | – E Balagurusamy |

QUESTION PAPER PATTERN

PART- I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART- II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART- IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1 & Unit 2

Question 2 from Unit 3 & Unit 4

Question 3 from Unit 5

PRACTICAL: JAVA PROGRAMMING LAB

1. Write a Java program to generate first n odd numbers and pick and display prime numbers among them. Read value for n as command line argument.
2. Write a Java program to create a vector, add elements at the end, at specified location onto the vector and display the elements. Write an option driven program using switch...case.
3. Write a java program to find area of geometric figures (atleast 3) using method overloading.
4. Write a Java program to find the circumference and area of the circle using interface.
5. Write a java program to sort the alphabets in the given string.
6. Write a java program to accept student information using array of objects and constructor initialisation.
7. Write a java program to implement constructor overloading by passing different number of parameter of different types.
8. Define a package to contain the class sort to contain methods for various sorting techniques with time complexity (at least 2) Use this package to sort the list
9. Write a Java program to demonstrate multi-threading.
10. Write a program to implement an applet by passing parameter to HTML
11. Write an applet program to display human face
12. Create an applet to display concentric n circles, input value for n.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Writing 20 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

FIFTH SEMESTER BSc

Computer Science -VI

BCS-6: Operating System and UNIX

Number of teaching hours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

Unit 1.Introduction to Operating systems, CPU Scheduling and Memory management **10hrs**

Introduction, types and functions of operating systems. Scheduling concepts, algorithms, performance criteria, FCFS, Shortest job first, priority scheduling, Pre-emptive algorithm – round robin. Function, single contiguous allocation, multiprogramming, partitioned allocation. Paged memory management.

Unit 2.Dead lock and File system **05hrs**

Deadlock problem, deadlock characteristics, deadlock prevention and avoidance. File concept access methods, directory structures, protection and consistency semantics

Unit 3.Introduction to UNIX, The File System **15hrs**

The Unix operating system, A brief Session, The Unix Architecture, Features of UNIX, Locating commands, Internal and External commands. General-Purpose Utilities: man, cal, date, echo, printf, bc, script, passwd, who, uname. The file, The Parent –Child Relationship, The HOME Variable, pwd, cd, mkdir, rmdir, Absolute Pathname, Relative Pathname, ls, The Unix File system. Handling Ordinary Files: cat, cp, rm, mv, more, lp subsystem: Printing a File, File, wc, od, cmp, comm, diff, dos2unix and unix2dos, compressing and archiving files, gzip, and gunzip, tar, zip and unzip.

Unit 3: Basic File Attributes and Vi Editor **08hrs**

Listing file attributes, File Ownership, File Permissions, changing file permissions, Changing File Ownership Vi basics, Input Mode, Saving Text and Quitting, Navigation, Editing Text, Undoing Last Editing Instructions(U and U), Repeating the last command(.), Searching for a Pattern(/ and ?), Substitution.

Unit 5:The Shell: **10hrs**

Brief introduction, The shell's Interpretive Cycle, Shell variables. Essential shell programming: Shell scripts, read, using command line arguments, the logical operators && and ||- conditional execution, the if conditional, using test and [] to evaluate expressions, the case conditional, expr, while, for, set and shift, file test operator. Pattern matching :grep

Refernces :

- 1.Sumitabha Das, UNIX System V.4, Concepts and Applications, TMH
- 2.Operating systems concepts, Korth

QUESTION PAPER PATTERN

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART- IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1 & Unit 2

Question 2 from Unit 3 & Unit 4

Question 3 from Unit 5

PRACTICAL: UNIX PROGRAMMING LAB

- 1) Write a shell script program to perform all arithmetic operation on floating point.
- 2) Write a shell script program to check whether the given number is positive or negative.
- 3) Write a shell script program to reverse a number.
- 4) Write a shell script program to find sum of digit of a number.
- 5) To Find the sum of the series (sum= $1 + \frac{1}{2} + \dots + \frac{1}{n}$)
- 6) Write a shell script to perform the following any one operation based on your own choice.
 - a. Show first 5 line data
 - b. Show last 3 line data
 - c. Sort the data
 - d. Find out word count
- 7) Add, subtract and multiply the two given number passed as command line argument.
- 8) Write a shell script to count number of characters in a given string
- 9) Write a shell script program to read pattern and file name and search whether the given pattern in a file or not.
- 10) Write a shell script to read filename from command line argument check whether the file is regular file or directory or by both.
- 11) Find the number of directory file and ordinary files in the current
- 12) To read two file names and check which one is newer and which one is older.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Writing 20 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

SIXTH SEMESTER BSc

Computer Science -VII

BCS-7 ADVANCED PROGRAMMING IN JAVA

Number of teaching hours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

Unit 1: Review of Java Concepts and AWT, Graphics Programming 10hrs

Review of Java Concepts .AWT and AWT Classes, Window fundamentals – Component, Container, Panel, Window, Frame, Canvas. Working with frame window. Graphics Programming: Graphics class, methods, drawing objects, line graphs, polygon classes, working with colours and fonts. Advanced graphics operations using Java2D.Designing simple User Interfaces (UIs) using AWT, Layout Manages.

Unit 2: Swings and event handling 10hrs

Event Handling: Basics of Event Handling, the delegation event model, AWT event hierarchy and event classes, Event Listener Interfaces, Adapter Classes, Event queue. Swing: Meaning, need difference between AWT and swing. The Model-View-Controller (MVC) design patterns, Creating simple UIs using swing, and handling basic events.

Unit 3: Java Beans, Java Archives (JAR) 08hrs

Meaning and need of Java Beans, Advantages, Bean writing process, Bean properties.Java Archives (JARs): Meaning, need, the JAR utility, Creating JAR files.

Unit 4: File Management and JDBC 10hrs

File, creating a file, writing to a file, opening a file, reading from a file, file management, checking existence of a file, deleting a file.JDBC: Meaning, need, concept and structure of JDBC, relation with ODBC, JDBC driver types and their meaning, the JDBC process – loading the driver, connecting to the DBMS, creating and executing SQL statement, Connection object, Statement object, Prepared Statement object, Callable Statement, Result Set, JDBC Exceptions.

Unit 5: Fundamental concepts of Collections, Generics and Network programming 10hrs

Collections: Meaning, need, Collection interfaces, Concrete Collections – Array List, Hash set, Map. Generics: Meaning, need, benefits, generics usage, basics of generic types, type parameter naming conventions, type wildcards, using type wildcards, generic methods, bound types, writing simple generic container, implementing the container, implementing the constructors, implementing generic methods. Network programming: Meaning of Client, Server, Socket, port. Creating a client socket, creating a server socket, writing simple server and client.

References:

1. Complete Reference – Java 2: Herbert Schildt, 5th / 7th Edition, Tata McGraw-Hill
2. Thinking in Java: Bruce Eckel
3. Core Java 2: Volume I – Fundamentals: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.
4. Core Java 2: Volume II – Advanced Features: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.

QUESTION PAPER PATTERN

PART I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1 and Unit 2.

Question 2 from Unit 3 & Unit 4

Question 3 from Unit 5

PRACTICAL: ADVANCED JAVA PROGRAMMING LAB

1. Write an applet to add, remove, select an item in a list
2. Write an applet to display selected geometric figure from a list.
3. Write a program to implement mouse events
4. Write a program to implement keyboard events
5. Write a Java program (console) to store the typed text to a file.
6. Write a Java program to display the content of a file.
7. Write a Java program with JDBC to store the details of a person on to an Oracle database table.
8. Write a Java program with JDBC to access and display the details of a person stored in an Oracle database table.
9. Write a Java program with JDBC to access and delete the details of a given person stored in an Oracle database table.
10. Write a Java GUI program to accept the details of an employee and store the same on to an Oracle database table.
11. Write a Java program to design a simple Client and Server components. Pass simple text (static) from client to the server and a receipt acknowledgement (static) back to the client.
12. Write a Java program to demonstrate the use of generics.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Writing 20 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

SIXTH SEMESTER BSc

Computer Science -VIII

BCS-8 :SOFTWARE ENGINEERING & COMPUTER NETWORKS

Number of Teaching hours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

Unit 1. Introduction to Software Engineering and Software process 10hrs

Software, Software Engineering, phases in software development, role of management and Software metrics. Software process, process models- waterfall model, prototyping model, iterative enhancement model and spiral model.

Unit 2. Software design 07hrs

Design objectives, design principles, module level concepts, structured design methodology, introduction to detailed design, SRS.

Unit 3. Coding and Testing

Programming practices, top down & bottom up approaches, structured programming, programming style. Testing fundamentals, brief introduction to functional testing and structural testing. Difference between black box testing and white box testing.

Unit 4 Introduction to Computer networks Network Hardware 10hrs

Definition and goals of computer network. Types of Networks- Broadcast, point-to-point, LAN, WAN, MAN, network topologies, wireless network example, Internet and its applications. 10 hrs

Unit 5 Network Software, Reference models and Transmission Media 13hrs

Network Architecture, Design issues of network, connection oriented and connectionless services. OSI / ISO model, TCP / IP model, Novell network, ARPANET. Transmission Media- magnetic media, twisted pair, coaxial cable, fibre optics cable

References:

1. An integrated approach to Software Engineering : Pankaj Jalote.
2. Software Engineering a practitioners approach : Roger Pressman.
3. Computer networks : Andrew S Tanenbaum.

QUESTION PAPER PATTERN

PART- I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART- II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART -IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1 and Unit 2.

Question 2 from Unit 3 & Unit 4

Question 3 from Unit 5

PRACTICAL: PROJECT LAB

PROJECT LAB EXAM SCHEME

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. The project is of 3 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The Project work should be either an individual lone or a group of not more than five members.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The examiner will evaluate the project work as follows:

- Project Report - 10 Marks
- Project Demo - 10 Marks
- Viva-Voce - 20 Marks



Minutes of the Meeting of Board of Studies in Commerce (UG) held on Friday, 29 December 2017 at 11 am in the DoS in Commerce, Kuvempu University, Jnana Sahyadri

Members:

- | | |
|-----------------------|----------------------------|
| (1) Sri Umapathi K G | (4) Smt V Shalini |
| (2) Sri Poornesh K | (5) Sri B Malleshi Naik |
| (3) Sri B R Dayananda | (6) J. Madegowda: Chairman |

After the formal welcome by the chairman, the Board took up the subjects listed in the Agenda for discussion and after discussion resolved appropriately as presented below.

(1) Review of Question Papers set for April/November 2017 examinations

The Board reviewed the question papers set for April/November 2017 examinations of B.Com (both regular and distance mode) and found them in order.

(2) Preparation and approval of Panels of Examiners for April/November 2018 examinations of B.Com (both regular and DDE)

The Board prepared and approved the Panels of Examiners for B.Com examinations, 2018 (both regular and distance mode), and authorized the Chairman to send the same to the Registrar (Eval) separately (**Appendix – 1**).

(3) Revision and approval of curricula of B.Com (regular) programme

The Board prepared and approved the thoroughly revised and comprehensive course curricula B.Com programme (Regular). Further, the Board resolved to recommend to the Faculty of Commerce for its consideration and approval (**Appendix – 2**).

(4) Any other subject with the permission of the Chairman: Question Papers

Members of the Board discussed the issue of translating the question papers of quantitative courses from English to Kannada from the points of view of its utility to the students, time and cost factors, and resolved to have the question papers of quantitative courses only in English.

Signature of Members:

- | | |
|----------------------|-------------------------|
| (1) Sri Umapathi K G | (3) Sri B R Dayananda |
| (2) Sri Poornesh K | (4) Sri B Malleshi Naik |

(J. Madegowda)

Chairman

Appendix - 2



Kuvempu University

Department of Post-Graduate Studies and Research in Commerce

Jnana Sahyadri, Shankaraghatta 577 451 (Shivamogga District, Karnataka)

e-mail: commerce@kuvempu.ac.in



B. Com Curricula, 2018-19

[prepared and approved by the Board of Studies in Commerce (UG) in its meeting held on
29 December 2017]



Structure of B.Com Programme

Sl. No.	Academic Programme, Semester and Title of the Course	Weekly Teaching Hours	Examination Duration (hours)	Maximum Marks		
				CAP ¹	SEE ²	Total
B.Com, Semester - I						
101	Language – I, Course - I	4	3	20	80	100
102	Language – II, Course – I	4	3	20	80	100
103	Financial Accounting – I	4	3	20	80	100
104	Business Environment and Government Policy	4	3	20	80	100
105	Principles of Business Management	3	3	20	80	100
106	Market Behaviour and Cost Analysis	4	3	20	80	100
Total, Semester - I				120	480	600
B.Com, Semester - II						
201	Language – I, Course – II	4	3	20	80	100
202	Language – II, Course – II	4	3	20	80	100
203	Financial Accounting – II	5	3	20	80	100
204	Human Resource Management	4	3	20	80	100
205	Mathematics for Business	4	3	20	80	100
206	Indian Financial System	4	3	20	80	100
Total, Semester - II				120	480	600
B.Com, Semester - III						
301	Language – I, Course – III	4	3	20	80	100
302	Language – II, Course – III	4	3	20	80	100
303	Corporate Accounting – I	4	3	20	80	100
304	Marketing Management	4	3	20	80	100
305	Small Business Management	4	3	20	80	100
306	Corporation Administration	4	3	20	80	100
307	Environmental Science	4	3	20	80	100
Total, Semester - III				140	560	700
B.Com, Semester - IV						
401	Language – I, Course – IV	4	3	20	80	100
402	Language – II, Course – IV	4	3	20	80	100
403	Corporate Accounting – II	5	3	20	80	100
404	Management of Banking Operations	4	3	20	80	100
405	Computer Applications in Business	4	3	20	80	100
406	Business Regulations	3	3	20	80	100
407	Indian Constitution	4	3	20	80	100
Total, Semester - IV				140	560	700

¹ Continuous Assessment Programme² Semester-end Examination

B.Com, Semester - V						
501	Financial Management	4	3	20	80	100
502	Income Tax – I	4	3	20	80	100
503	Business Statistics - I	4	3	20	80	100
504	Cost Accounting	4	3	20	80	100
505	Advanced Accounts	4	3	20	80	100
506	Goods and Services Tax	4	3	20	80	100
507	Specialization Stream, Course – I	4	3	20	80	100
508	Logical and Analytical Reasoning	2	1½	10	40	50
Total, Semester - V				150	600	750
B.Com, Semester - VI						
601	International Financial Reporting Standards	4	3	20	80	100
602	Income Tax – II	4	3	20	80	100
603	Business Statistics – II	4	3	20	80	100
604	Cost Accounting – Methods and Techniques	4	3	20	80	100
605	Management Accounting	5	3	20	80	100
606	Principles and Practice of Auditing	3	3	20	80	100
607	Specialization Stream, Course – II	4	3	20	80	100
608	Soft Skills	2	1½	10	40	50
Total, Semester - VI				150	600	750
Grand Total				820	3,280	4,100

Specialization Stream – A: Finance Stream

507A Advanced Financial Management

607A Security Analysis and Portfolio Management

Specialization Stream – B: Marketing Stream

507B Product and Sales Management

607B Retail Management

Specialization Stream – C: Banking and Insurance Stream

507C Advanced Bank Management

607C Life and General Insurance

Specialization Stream – D: E-Commerce Stream

507D E-Commerce – 1

607D E-Commerce – 2

Specialization Stream – E: Quantitative Techniques Stream

507E Quantitative Techniques – 1

607E Quantitative Techniques – 2

B.Com, Semester – I
Course – 103: Financial Accounting – I

Course Objective: To acquaint students with the accounting concepts, conventions, accounting process and preparation of Financial Statements

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit**Course Inputs**

- I. **Introduction to Financial Accounting** (6 hours): Introduction - Meaning and Definition; Objectives of Accounting; Functions of Accounting; Accounting Concepts and Accounting Conventions.
- II. **Final Accounts of Sole Trading Concerns** (12 hours): Financial Statements – Preparation of Manufacturing Accounts; Profit and Loss Account, and Balance Sheet with respect to current market conditions.
- III. **Consignment Accounts** (16 hours): Introduction, Meaning – Consignor, Consignee; Goods Invoiced at Cost Price, Goods Invoiced at Selling Price, Normal Loss, Abnormal Loss, Valuation of Stock, Stock Reserve, Journal Entries, Ledger Accounts in the Books of Consignor and Consignee.
- IV. **Accounting for Joint Ventures** (15 hours): Introduction, Meaning, Objectives, Distinction between Joint Venture and Consignment; Distinction between Joint Venture and Partnership; Maintenance of Accounts – when separate set of Books are maintained, and when separate set of Books are not maintained with Joint Bank Account and Problems.
- V. **Final Accounts of Non-profit Organizations** (15 hours): Meaning of Non-profit Organization, Need for maintaining Accounts, Financial Statements of Non-profit Organizations, Receipts and Payments Account, Income and Expenditure Account, and Balance Sheet. Capital and Revenue Items – Treatment of special Items, Preparation of Income and Expenditure Account, and Balance Sheet from Receipts and Payments Account and Problems.

Skill Development Activities:

- (1) Draft the specimen of various Subsidiary Books
- (2) Collect a Trial Balance from a Sole Trader and prepare Final Accounts
- (3) Prepare Proforma Invoice and Account Sales
- (4) Prepare Joint Venture Account with imaginary figures when joint bank account is maintained
- (5) Collect Receipts and Payment Account of a Non-trading Concern and prepare a note on the contents

Recommended Books for Reference:

- (1) J Madegowda and Dr Giridhar, K V, Financial Accounting (Volume – I), Himalaya Publishing House, Mumbai
- (2) Dr. B. Mariyappa, Anil Kumar – Advanced Financial Accounting, HPH
- (3) Arulanandam & Raman; Advanced Accountancy, HPH
- (4) Dr. Alice Mani: Advanced Financial Accounting, SBH.
- (5) Dr. S.N. Maheswari, Financial Accounting, Vikas Publication
- (6) S P Jain and K. L. Narang, Financial Accounting, Kalyani Publication

B.Com, Semester – I**Course – 104: Business Environment and Government Policy**

Course Objective: To acquaint students with the business environment and government policy

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit	Course Inputs
-------------	----------------------

- | | |
|--|--|
| <p>I. Introduction to Business Environment (14 hours): Meaning, Objectives of Business, Features of Business, Business Environment, Internal and External Environment - Economic Environment, Social Environment, Cultural Environment, Demographic Environment, Legal Environment, Technological Environment, and Emerging Scenario and Business Policy.</p> <p>II. Business Ethic (13 hours): Principles of Business Ethics, Unethical Practices and Good Ethics of Business; Social Responsibility of Business, Doctrine of Social Responsibility, Rational of Social Responsibility and Unfair Trade Practices.</p> <p>III. Technology in Business (12 hours): Introduction, Need and Importance, Technological Factors influencing Business, Benefits and Limitations of Modern Technology to Business.</p> <p>IV. Business and Government (12 hours): Introduction, Government Intervention and Economic Growth, Regulatory Growth, Promotional Growth, Inter Personal Growth and Planning Growth.</p> <p>V. Business Policy (13 hours): Importance of Business Policy, Essentials of Business Policy, Classifications of Business Policy, Production Policy, Personal Policy, Financial Policy and Marketing Policy.</p> | |
|--|--|

Skill Development Activities:

- (1) Draw a Business Tree
- (2) Prepare a Partnership Deed
- (3) Prepare Memorandum and Articles of Association of any company
- (4) Discuss the impact of globalization on Indian Business and Industry
- (5) State the impact of technology on Indian Business

Recommended Books for Reference:

- (1) Dr. Aswathappa Essentials of Business, Himalaya Publishing House
- (2) Francis Cherunilam; Economic Environment Business, Prentice Hall of India
- (3) P. Subba Rao, International Business, HPH
- (4) Amarchand, Business and Government
- (5) Vivek Mittall, Business Environment
- (6) Raj Agarwal, Business Environment

B.Com, Semester – I**Course – 105: Principles of Business Management**

Course Objective: To acquaint students with the principles of managing of business concerns

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit	Course Inputs
-------------	----------------------

- | | |
|---|--|
| <p>I. Nature and Functions of Management (14 hours): Meaning and Definition, Functions and Scope of Management, Levels of Management, Management vs Administration; Scientific Management, Evolution of Management Thought, Contributions of F W Taylor, Henry Fayol, Elton Mayo, and C.K Prahlad; and</p> | |
|---|--|

Management as Science, Art and Profession.

- II. **Planning and Decision Making** (14 hours): Nature and Importance of Planning, Types, Steps involved in Planning, Planning Premises, Planning Process. Decision Making - Meaning, Role, Steps involved in Decision Making Process, Significance of Decision Making, and Guidelines for effective Decision Making.
- III. **Organizing** (16 hours): Nature, Principles, Types, Structure of Organization, Line and Staff Organization, Formal vs Informal Organization, Delegation of Authority, Principles of Delegation, Barriers to effective Delegation, Guidelines for Making effective Delegation, Span of Control, Authority and Responsibility, Authority vs Power, and Forms of Organization Structure.
- IV. **Directing, Motivation and Control** (10 hours): Meaning, Nature, Significance and Techniques of Directing: Motivation - Meaning and Importance; Control - Meaning, Steps in Control, Features of effective Control System, Controlling Tools and Techniques, and Essentials of Effective Control.
- V. **Leadership and Modern Management Techniques** (10 hours): Meaning of Leadership, Leadership Styles and Importance of Leadership: Modern Management Techniques - MBO, MBE, TQM, ISO, Stress Management (only meaning of modern management techniques).

Skill Development Activities:

- (1) Draft an Organization Chart
- (2) Narrate the steps in Selection Process
- (3) List out F W Taylor's Principles of Management
- (4) Narrate the steps in effective Control System
- (5) Mention the features of Modern Management Techniques

Recommended Books for Reference:

- (1) Principles of Management, Koontz and O'Donnell
- (2) Business Management, Gupta C B, Sultan Chand
- (3) Principles and Practice of Management, Prasad L M, Sultan Chand
- (4) Management, Stoner A F and Freeman R.E, Prentice Hall
- (5) Professional Management, Theo Haimann
- (6) Management Concepts and Practice, B P Singh and T N Chhabbra

B.Com, Semester – I

Course – 106: Market Behaviour and Cost Analysis

Course Objective: To acquaint students with the different dimensions of market behaviour and role of cost analysis in decision making

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Firms and Decisions** (14 hours): Firms - Meaning and Goals, Profit Maximization vs Wealth Maximization Dynamics, Decision Making – Features, Process, Strategy, Tactical and Operational Decisions, Game Theory, and Problems.
- II. **Market Forces** (12 hours): Demand - Meaning, Law of Demand, Nature of Elasticity of Demand, Determinants of Elasticity of Demand, Derived Demand Relations. Demand Forecasting - Meaning and Methods (Problems on Trend Projection by Method Least Squares); Supply - Law of Supply, and Determinants of Supply.
- III. **Production and Cost Analysis** (16 hours): Production Function – Concept and Importance, Cost Analysis - Meaning of Short-run and Long-run Costs, Fixed and

Variable Costs, Explicit and Implicit Costs, Opportunity Cost and Incremental Costs (concepts only). Total Cost, Average Cost and Marginal Cost Behavior in Short-run and Long-run (including problems). CVP Analysis – Assumptions, Uses, P/V Ratio, BEP, BE Chart, Margin of Safety and Problems.

- IV. **Pricing Practices and Strategies** (12 hours): Price – Pricing, Pricing Policy, Objectives and Determinants of Pricing Policy, Pricing Methods - Marginal Cost Pricing, Target Rate Pricing, Product Line Pricing, Administered Pricing, Competitive Bidding, Dual Pricing, Transfer Pricing; Price Discrimination - Requirements, Types and Dumping Strategies; Pricing over Product Life Cycle - Skimmed Pricing, Penetration Pricing, Product Line Pricing and Price Leadership; Linear Programming Problems – Problems on Profit Maximization and Cost Minimization using Graphic Method with two Variables.
- V. **Location of a Firm** (10 hours): Locating the Firm, Basic Principles, Selecting an Industrial Location, Primary and Secondary Factors; Sources of Capital, Internal and External Sources; Risk and Uncertainty – Concepts, and Investment Decisions under Uncertainty (Models).

Skill Development Activities:

- (1) A case study on decision making under market uncertainties
- (2) A practical example with graphical presentation of Elasticity of Demand
- (3) Construct a table with imaginary figures showing the relationship of Fixed Cost, Variable Cost, Total Cost, Average Fixed Cost, Average Variable Cost, Average Cost and Marginal Cost.
- (4) Practical analysis of product life cycle of a product
- (5) List out factors to be considered for location of a new firm

Recommended Books for Reference:

- (1) Dr. B. Mariyappa: Market Behaviour and Cost Analysis, Himalaya Publishing House, New Delhi
- (2) P L Mehta: Managerial Economics, Sultan Chand & Sons, New Delhi
- (3) D. M. Mithani: Managerial Economics, Himalaya Publishing House, New Delhi
- (4) R. L Varshney and K.L Maheshwari: Managerial Economics, Sultan Chand & Sons, New Delhi
- (5) H. L Ahuja: Business Economics, S. Chand & Company Ltd., New Delhi
- (6) Reddy and Appananiah: Economics for Business
- (7) K. M. Pandey and others: Economics for Managerial Decisions
- (8) K P M Sundaram: Micro Economics, Sultan Chand & Sons, New Delhi
- (9) M L Jhingan & J K Stephen: Managerial Economics, Vrinda Publishing (P) Ltd, Delhi.
- (10) Manoj Kumar Mishra: Managerial Economics, Voyu Education of India, New Delhi

B.Com, Semester – II

Course – 203: Financial Accounting – II

Course Objective: To acquaint students with the different accounting practices in the company

Pedagogy: combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Hire Purchase System** (16 hours): Meaning of Hire Purchase and Installment Purchase System; Differences between Hire Purchase and Installment Purchase, Important Definitions – Hire Purchase Agreement, Hire Purchase Price, Cash Price,

- Hire Purchase Charges, Net Hire Purchase Price, Net Cash Price; Calculation of Interest, Calculation of Cash Price; and Journal Entries and Ledger Accounts in the books of Hire Purchaser and Hire vendor (Asset Accrual Method only).
- II. **Departmental Accounts** (8 hours): Meaning, Objectives, Basis of Allocation of Expenses, Trading and Profit and Loss Account in Columnar Form and Balance Sheet.
 - III. **Branch Accounts** (14 hours): Introduction, Meaning, Objectives, Types of Branches - Dependent Branches, Features; Supply of Goods at Cost Price and Invoice Price; Branch Account in the books of Head Office, Debtors System only and Problems.
 - IV. **Fire Insurance Claims** (10 hours): Introduction, Need, Steps for ascertaining Fire Insurance Claim, Treatment of Salvage, Average Clause, Treatment of Abnormal Items, Computation of Fire Insurance Claims and Problems on Loss of Stock.
 - V. **Royalty Accounts** (16 hours): Meaning and Definition, Technical Terms – Royalty, Landlord, Tenant, Minimum Rent, Short Workings, Recoupment of Short Working, Recoupment within the life of the Lease, Treatment of Strike and Stoppage of Work, Accounting Treatment in the books of Lessee and Lessor, and Journal Entries and Ledger Accounts including Minimum Rent Account.

Skill Development Activities:

- (1) Collect Hire Purchase Agreement – analyze and prepare a note on the same
- (2) List out the basis of apportionment of common expenses
- (3) Collect transactions relating to any branch and prepare a Branch Account
- (4) Prepare a Claim Statement with imaginary figures to submit to insurance company
- (5) Collect Royalty Agreement with regard to any suitable situation – analyze and prepare a note on the same

Recommended Books for Reference:

- (1) J Madegowda and Dr Giridhar, K V, Advanced Financial Accounting (Volume – II), Himalaya Publishing House, Mumbai
- (2) Dr. B. Mariyappa, Advanced Financial Accounting, HPH
- (3) Arulanandam and Raman, Financial Accounting – I, HPH
- (4) Dr. S. N. Maheswari: Financial Accounting, Vikas Publications
- (5) S P Jain and K. L. Narang, Financial Accounting - I, Kalyani Publishers
- (6) Radhaswamy and R. L. Gupta, Advanced Accounting , Sultan Chand
- (7) Soundarrajan and K. Venkataramana, Financial Accounting, SHBP

B.Com, Semester – II

Course – 204: Human Resource Management

Course Objective: To acquaint students with different dimensions of HRM in the organizations

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Human Resource Management** (12 hours): Meaning and Definition of HRM, Evolution of HRM in India, Scope, Objectives, Concepts, Functions and its Strategic Role, and Recent trends in HRM and HRD.
- II. **Employment and Development** (12 hours): Human Resource Planning, Job Analysis and Job Design, and Recruitment and Selection Process including E-Recruitment and Selection.
- III. **Executive Development** (14 hours): Meaning of Training, Need for Training, Importance, Steps in Training Programme, Methods of Training. Performance

Appraisal – Terminology Used, Evaluation Process, Methods and Problems.

- IV. **Compensation Management** (14 hours): Meaning, Nature and Purpose, Wage Levels and Structures, Wage Determination Process, Theory of Wages, Principles and Factors influencing Wage and Salary Structure and Administration, Rewards and Incentives.
- V. **Human Relations** (12 hours): Meaning, Importance, Objectives, Motivation Theories, Employee Morale, Communication, Leadership, Employee Welfare, Health and Safety, Maintenance of HR Data Base, Challenges and Opportunities in Globalized Era, and Outsourcing of HR Functions.

Skill Development Activities:

- (1) Draft an advertisement for recruitment of candidates for an organization
- (2) Prepare a report for training procedure followed in an organization of your choice
- (3) Draft a format of performance appraisal of an employee
- (4) List out wage and salary structure of any five companies
- (5) Write a model of pay roll accounting of a company of your choice
- (6) List out the measures provided under Labour Act for employee welfare, health and safety

Recommended Books for Reference:

- (1) Dr. K. Ashwathappa, Human Resource Management – HPH
- (2) Dr. Appanaiah, Human Resource Management, HPH
- (3) Rao and T.V. Verma, Human Resource Development
- (4) Jean Marleen, Performance Oriented Human Resource Development
- (5) Lalitha Balakrishna and Others, Human Resource Development

B.Com, Semester – II

Course – 205: Mathematics for Business

Course Objective: To acquaint students with the application of mathematical techniques in modern business

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit Course Inputs

- I. **Theory of Indices** (6 hours): Introduction, Meaning of Index, Basic Laws of Indices (statement only), Definition of Zero Index, Fractional Index and Negative Index and Problems on Simplification.
- II. **Progressions** (8 hours): Arithmetic Progression, Finding the n^{th} Term of AP and Sum to n^{th} Term of AP; Insertion of Arithmetic Mean; Geometric Progression – Finding the n^{th} Term of GP and Sum to n^{th} Term GP and Insertion of Geometric Mean.
- III. **Mathematics of Finance, Ratios, Proportions and Variations** (14 hours): Simple Interest, Problems on Simple Interest, Compound Interest, Annuities, Present and Future Value of Annuity, Discounting Bills of Exchange (Present Worth, Future Face Value, Trade Discount and Banker Discount, Bankers Gain and Amount Receivable); Equality of Ratios; Proportions – Fourth Proportional – Third Proportional and Mean Proportional – Continued Proportion, Direct and Inverse Proportions, Problems; Variations - Problems on Speed, Time and Work Completion.
- IV. **Theory of Sets** (10 hours): Meaning, Elements of a Set, Methods of Describing a Set, Types of Sets and Operations, Demargan's Laws Venn Diagram and their Application to Theory of Sets.
- V. **Theory of Equations** (14 hours): Simple Linear Equations, Simultaneous Linear Equation (Elimination, Substitution and Cross Multiplication Methods only),

Quadratic Equation, Pure Quadratic, General Form of Quadratic Equations, Factorization and Sridharacharya's Methods and Problems.

- VI. **Matrices and Determinants** (12 hours): Meaning of Matrix, Types of Matrices, Operations of Addition, Subtraction and Multiplication of Matrices, Problems, Transpose of A Matrix, Determinants of a Square Matrix, Minor of an Element, Co-Factor of an Element, Ad Joint of a Square Matrix, Singular and Non-singular of a Square Matrix, Inverse of a Square Matrix. Solutions of System of Linear Equations in two Variables using Cramer's Rule and Problems.

Skill Development Activities:

- (1) Collect details from your nearest trading concern regarding normal discount and prepare a note on the same
- (2) Collect information from a financial company or firm regarding rate of interest charged on advances and deposits and how the bills are discounted by the business firms and banks - prepare a note on the same
- (3) Develop an amortization table for loan amount – EMI Calculation
- (4) Secondary Overhead Distribution Summary using Simultaneous Equations Method
- (5) Preparation of Bank Statement
- (6) Application of Matrix in business problems

Recommended Books for Reference:

- (1) Dr. Sancheti & Kapoor: Business Mathematics and Statistics, Sultan Chand
- (2) Zamarudeen: Business Mathematics, Vikas
- (3) R.S Bhardwaj :Mathematics for Economics & Business
- (4) Madappa, Mahadi Hassan, M. Iqbal Taiyab, Business Mathematics
- (5) G.R. Veena and Seema, Business Mathematics and Statistics, I. K. Intl Publishers

B.Com, Semester – II

Course – 206: Indian Financial System

Course Objective: To acquaint students with the requisite knowledge about present Indian Financial System

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Financial System** (12 hours): Meaning, Role and Classification of Financial System, Organizational Structure of Indian Financial System, Major Components - Financial Institutions, Intermediaries and Financial Instruments.
- II. **Financial Markets in India** (16 hours): Capital Market, Role and Importance, Development Initiatives and Reforms – Narasimham Committee Reports 1991 and 1998; Primary Market - Meaning, Instruments, Players and Problems; Secondary Market – Meaning, Function; Stock Exchange, Listing of Securities and Benefits, Types of Securities, Types of Dealings. Indian Stock Exchange (BSE, NSE, OTCET) Online Trading, and Demat Accounting.
- III. **Money Market and Regulatory Institutions** (12 hours): Meaning, Features, Organized and Unorganized Money Market Instruments – Treasury Bills, Certificate of Deposits, Commercial Papers, Call Money, Commercial Bills; Emerging Structure of Indian Money Market; Reserve Bank of India (RBI) - Objectives and Functions; Monetary Policy of RBI, SEBI and IRDI – Role and Functions.
- IV. **Co-operative Banking and Non-Banking Financial Institutions** (12 hours): Evaluation of Co-operative as Financial Institutions in India, Structure, Role and

Importance of Co-operative Banks, Agricultural and Non-agricultural Co-operative Banks, NBFIs – Importance, Role and Types of NBFIs In India, IDBI, ICICI, SFCs, SIDCs, LIC And NABARD.

- V. **Financial Services** (12 hours): Meaning, Importance of Financial Services, Insurance, Mutual Funds, Lease Finance, Merchant Banking, Venture Capital Financing, Factorizing, Credit Rating Agencies, Micro Finance and Self Help Groups, Financial Inclusion Programs in India.

Skill Development Activities:

- (1) Draft a chart showing the financial services in the Indian Financial System
- (2) List the instrument traded in the financial markets
- (3) Collect and record the foreign exchange rates of different currencies
- (4) Collect the different schemes of mutual funds offered by various financial institutions
- (5) Make a list of institutions providing housing and vehicle finance in your area

Recommended Books for Reference:

- (1) Principles of Bank Management by Vasantdesai, Himalaya Publishing House
- (2) Indian Financial System by Bhartiv, Pathak, Pearson Education
- (3) Financial Markets and Services, E. Gordon and K. Natarajan, Himalaya Publishing House
- (4) Indian Financial System, K Gupta, N. Garwal, Kalyani Publications.
- (5) The Indian Financial System – Markets, Institutions, and Services, Pearson, New Delhi
- (6) Financial Institutions and Markets, Growth and Innovation, Bhole L. M: Tata McGraw-Hill, New Delhi

B.Com, Semester – III

Course – 303: Corporate Accounting – I

Course Objective: To acquaint students with the procedure of preparing the accounts of corporate enterprises with the help of principles and regulations

Pedagogy: combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit Course Inputs

- I. **Profit Prior To Incorporation** (10 hours): Meaning, Calculation of Time Ratio, Sales Ratio and Weighted Ratio, Treatment of Capital and Revenue Expenditure, and Ascertainment of Pre-incorporation and Post-incorporation Profit by preparing Profit and Loss Account and Balance Sheet.
- II. **Valuation of Shares** (8 hours): Meaning, Need for Valuation of Shares, Factors affecting Valuation of Shares, Methods of Valuation - Intrinsic Value Method, Yield Method & Earning Capacity Method and Calculation of Fair Value of Shares.
- III. **Valuation of Goodwill** (8 hours): Meaning, Circumstances of Valuation of Goodwill, Factors influencing the Value of Goodwill, Methods of Valuation of Goodwill - Average Profit Method, Super Profit Method, Capitalization of Average Profit Method, Capitalization of Super Profit Method, and Annuity Method and Problems.
- IV. **Company Final Accounts** (20 hours): Statutory Provisions regarding preparation of Company Final Accounts, Treatment of Special Items – Tax Deducted at Source, Advance Payment of Tax, Provision for Tax, Depreciation, Interest on Debentures; Dividends – Rules regarding payment of Dividends, Transfer to Reserves; Preparation of Profit and Loss Account, and Balance Sheet in Vertical Form (as per Companies Act, 2013).
- V. **Underwriting of Shares and Debentures** (12 hours): Meaning, Underwriting

Commission; Underwriter – Functions, Advantages of Underwriting, Types of Underwriting – Marked and Unmarked Applications; – Problems on Underwriting including Firm Underwriting.

- VI. **Recent Trends in Company Accounts** (6 hours): Buy Back of Shares, Issue of Bonus Shares and Right Issue and Problems

Skill Development Activities:

- (1) Collect and fill the share application form of a limited company
- (2) Collect Prospectus of a company and identify its salient features, and prepare a note on the same
- (3) Collect annual report of a company and List out its assets and Liabilities
- (4) Collection of latest final accounts of a company and find out the intrinsic value of shares
- (5) Collect the annual reports of company and calculate the value of goodwill under different methods

Recommended Books for Reference:

- (1) J Madegowda, Dr Giridhar, K V, and Inchara P M Gowda, Corporate Accounting (Financial Accounting, Volume – III), Himalaya Publishing House, Mumbai
- (2) Dr. B. Mariyappa, Corporate Accounting, HPH
- (3) Arulanandam & Raman, Corporate Accounting – II
- (4) Dr. S. N. Maheswari, Financial Accounting
- (5) S. P. Jain and K. L. Narang, Corporate Accounting
- (6) S. Bhat- Corporate Accounting
- (7) S P Iyengar, Advanced Accountancy, Sultan Chand
- (8) R L Gupta, Advanced Accountancy
- (9) Shukla and Grewal, Financial Accounting

B.Com, Semester – III

Course – 304: Marketing Management

Course Objective: To acquaint students with different dimensions of present day marketing management

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Marketing** (10 hours): Meaning and Definition, Goals, Concepts of Marketing, Approaches to Marketing and Functions of Marketing.
- II. **Marketing Environment** (Macro) (10 hours): Meaning, Demographic, Economic, Natural, Technological, Political, Legal, and Socio-Cultural Environment.
- III. **Marketing Mix** (22 hours): Meaning, Elements, Product, Product Mix, Product Line, Product Lifecycle, Product Planning, New Product Development, Failure of new Product; Branding, Packing and Packaging; Pricing – Objectives, Factors influencing Pricing Policy and Methods of Pricing; Physical Distribution – Meaning, Factors affecting Channel Selection, Types of Marketing Channels; Promotion – Meaning and Significance of Promotion, Personal Selling and Advertising.
- IV. **Market Segmentation and Consumer Behavior** (10 hours): Meaning and Definition, Bases of Market Segmentation, Requisites of Sound Market Segmentation; Consumer Behaviour – Factors influencing Consumer Behaviour and Buying Decision Process.
- V. **Customer Relationship Management and Recent Trends in Marketing** (12 hours): Meaning and Definition, Role of CRM, Advantages and Disadvantages, Consumer

Protection Act 1986 and Recent Trends in Marketing; e-Business –Tele-Marketing, M-Business, Green Marketing, Relationship Marketing; Retailing – Concept Marketing and Virtual Marketing.

Skill Development Activities:

- (1) Identify the product of your choice and describe in which stage of the product life cycle it is positioned
- (2) Suggest strategies for development of a product
- (3) Study of consumer behavior for a product of your choice
- (4) Develop an advertisement copy for a product
- (5) Prepare a chart for distribution network for different products

Recommended Books for Reference:

- (1) Philip Kotler, Marketing Management
- (2) Bose Biplab, Marketing Management
- (3) Bholanath Datta, Marketing Management
- (4) J.C. Gandhi, Marketing Management
- (5) Ramesh and Jayanti Prasad: Marketing Management, I.K. International
- (6) Stanton W.J. Michael and Walker, Fundamentals of Management.
- (7) P N Reddy and Appannaiah, Marketing Management
- (8) Sontakki, Marketing Management

B.Com, Semester – III

Course – 305: Small Business Management

Course Objective: To acquaint students with different aspects managing small business units

Pedagogy: combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4

Maximum Marks: 100

Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction** (10 hours): Meaning of Small Business, Small Business Management, Importance, Role, Characteristics and Types of Small Business, Scope and Role of Government in promoting Micro, Small Scale Industries.
- II. **Woman Entrepreneurs** (12 hours): Concept, Types of Woman Entrepreneurs, Suitability of Business, Problems faced by Woman Entrepreneurs in India, Measures taken by the Governments for the development of Woman Entrepreneurs.
- III. **Rural Entrepreneurs** (10 hours): Definitions, Risk faced by Rural Entrepreneurs, Strategies for development of Rural Entrepreneurship, and Scope of Rural Entrepreneurship.
- IV. **Project Identification and Formulation** (12 hours): Meaning of Project, Project Identification and Project Reports, Importance of Project Report, Contents of Project Report, and General Format of Project Report.
- V. **Problems of Small Scale Industries** (12 hours): Types of Problems, Causes and Remedies, Sickness in Small Scale Industries, Symptoms, Reasons for Sickness and Remedial Measures.
- VI. **Institutions engaged in Financing Small Business** (8 hours): SIDBI, ICICI, DICs, IDBI, KSFC, RRBs, NABARD, Commercial Banks and their Functions.

Skill Development Activities:

- (1) Visit five small scale units in your area and collect the details regarding the nature of business, sources of capital, employees and raw materials – prepare a note
- (2) Visit DIC and list out the schemes of Government of Karnataka for rural industries
- (3) Visit the financial institutions in your area and collect the information about the loan

- sanctioned by them
- (4) Collect the details about the institutions engaged in providing training for small entrepreneurs
 - (5) Prepare a simple project report required to start a small unit

Recommended Books for Reference:

- (1) Entrepreneur Development, K Natarajan
- (2) Small Scale Industries and Entrepreneurship, Vasant Desai
- (3) Small Scale Industries and Entrepreneurship, S. V Murthy
- (4) Entrepreneurial Development, Arora

B.Com, Semester – III

Course – 306 Corporate Administration

Course Objective: To familiarize students with the essentials of corporate administration

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Indian Companies Act, 1956** (14 hours): Company –Definition and Characteristics, Kinds of Companies - Private, Public Company, Statutory Company, Foreign Company, Holding Company, Subsidiary Company, and Licensed Companies, Government Company, Foreign Company, Global Company, Listed Company, Body Corporate, Corporate Veil and Lifting of Corporate Veil.
- II. **Formation of a Company**(14 hours) Promoter - Meaning, Functions, Fiduciary Position and Remuneration, Stages Involved in formation (in brief), Basic Documents of a Company - Memorandum Association, Articles of Association, Prospectus, and Statement in Lieu of Prospectus, and Misleading Prospectus and its Consequences.
- III. **Corporate Administration** (8 hours): Company Secretary – Meaning and Definition of Company Secretary, Legal Position, Qualification and Appointment, Duties, Rights and Liabilities of a Company Secretary; Managing Director - Qualification, Powers, Duties and Liabilities.
- IV. **Shares and Membership of a Company Equity** (16 hours): Shares, Kinds of Shares - Equity Shares, (including Sweat Equity Shares) and Preferences Shares Issue and Allotment of Shares, Legal Rules for Allotment of Shares, Essentials of Valid Allotment, Shares Certificate – Physical Form and Electronic Form, Buyback of Shares – Legal Provisions Relating to Buy Back of Shares; Transfer and Transmission of Shares – Distinction, Electronic Transfer, Demat Account, Membership - Member and Share Holder – Distinction, Mode of Acquiring Membership, and Register of Members - Contents And Closer.
- V. **Corporate Meetings** (8 hours): Meetings and Types – Statutory Meeting, Board Meetings, Annual General Meeting, Extra-Ordinary General Meeting – Statutory Requirements of Valid Meeting - Notice of a Meeting, Agenda, Quorum, Proxy, Resolutions–Ordinary and Special Resolutions, and Distinction Between Ordinary and Special Resolutions; and Meaning of Minutes and its Contents.
- VI. **Highlights of Company Act 2013** (4 hours): New Concepts – One-man Company, Women Director, Corporate Social Responsibility and Other Amendments (brief).

Skill Development Activities:

- (1) Drafting of Memorandum of Association
- (2) Drafting of Articles of Association

- (3) Draft the following – Notice of annual general meeting, Extra ordinary general meeting and board meetings
- (4) Drafting resolutions of meetings - Annual general meeting, extra ordinary general meeting
- (5) Collect and fill Demat account opening form

Recommended Books for Reference:

- (1) Company Law and Secretarial Practice – M.C. Kuchal
- (2) Company Law and Secretarial Practice- N. D. Kapoor
- (3) Elements of Corporate Law, S.N Maheshwari
- (4) Corporate administration- K Venkataramana
- (5) The companies Act 2013, Taxman
- (6) Business Law- B.S Raman
- (7) Corporate Administration Dr. B.G Bhaskar, K.R Mahesh Kumar

B.Com, Semester – III

Course – 307: Environment Science

Course Objective: To acquaint students with the ecological structure of environment

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **The Multidisciplinary Nature of Environmental Studies** (2 hours): Meaning, Definition, Scope and Importance, and Need for Public Awareness.
- II. **Natural Resources** (8 hours): Renewable and Non-Renewable Resources; Natural Resources and Associated Problems; Forest Resources - Use and Over-exploitation, Deforestation, Case Studies; Timber Extraction, Mining Dams and their effects on Forests and Tribal People; Water Resources - Use and Over-utilization of Surface and Ground Water, Floods, Drought, Conflicts over Water; Dams - Benefits and Problems; Mineral Resources - Use and Exploitation, Environmental effects of Extraction and using Mineral Resources, Case Studies; Food Resources - World Food Problems, Changes caused by Agriculture and Overgrazing, Effects of Modern Agriculture, Fertilizer-Pesticide Problems, Water Logging, Salinity, Case Studies; Energy Resources - Growing Energy Needs, Renewable and Non-Renewable Energy Sources, Use of Alternate Energy Sources, Case Studies; Land Resources - Land as a Resource, Land Degradation, Man-induced Landslides, Soil Erosion and Desertification, Role of an individual in Conservation of Natural Resources; and Equitable Use of Resources for Sustainable Lifestyles.
- III. **Ecosystems** (6 hours): Concept of an Ecosystem, Structure and Function of an Ecosystem, Producers, Consumers and Decomposers, Energy Flow in the Ecosystem, Ecological Succession, Food Chains, Food Webs and Ecological Pyramids, Introduction, Types, Characteristic Features, Structures and Functions of the Following Ecosystem - Forest Ecosystem, Grassland Ecosystem, Desert Ecosystem, Aquatic Ecosystem (Ponds, Streams, Lakes, Rivers, Oceans, Sanctuaries).
- IV. **Biodiversity and its Conservation** (8 hours): Introduction, Definition, Genetic, Species and Ecosystem Diversity, Biogeographically Classification of India, Value of Biodiversity, Consumptive Use, Productive Use, Social Ethical Aesthetic and Option Values; Biodiversity at Global, National and Local Levels; India as a Mega-Diversity Nation; Hot-Spots of Biodiversity; Threats to Biodiversity; Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species of India,

- Conservation of Biodiversity, in-Situ and Ex-Situ Conservation of Biodiversity.
- V. **Environmental Pollution** (8 hours): Meaning, Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, and Nuclear Pollution; Solid Waste Management - Causes, Effects and Control Measures of Urban and Industrial Wastes; Role of an individual in prevention of Pollution, Pollution Case Studies; Disaster Management - Floods, Earthquake, Cyclone and Landslides.
- VI. **Social Issues and the Environment** (12 hours): From Unsustainable to Sustainable Development, Urban Problems related to Energy. Water Conservation, Rain Water Harvesting, Water Shed Management, Resettlement and Rehabilitation of People - Its Problems and Concern, Case Studies; Environmental Ethics - Issues and Possible Solutions, Climate Change, Global Warming, Acid Rain Ozone Layer Depletion, Wasteland Reclamation Consumerism and Waste Products, Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act, Wild Life Protection Act, Forest Conservation Act, Issues involved in Enforcement of Environmental Legislation, and Public Awareness.
- VII **Human Population and the Environment** (6 hours): Population Growth, Variation among Nations, Population Explosion – Family Welfare Programme, Environment and Human Health, Human Rights, Value Education, HIV/AIDS, Women and Child Welfare, Role of Information Technology in Environment and Human Health, and Case Studies

Skill Development Activities:

- (1) Visit to a local polluted site -urban/rural/industrial/agriculture
- (2) Visit to local area to document environmental assets – rivers/forests/grassland/hill/mountain
- (3) Study of common plants, insects, birds
- (4) Study of simple ecosystems - pond, river, hill, slopes etc (field work equal to 5 lecture hours)
- (5) Each student has to submit a field report on any one of the above topics which forms the basis for evaluation of field work

Recommended Books for Reference:

- (1) Aggarwal K.C, Environmental Biology, Nidhi Publications Ltd, Bikaner
- (2) Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd
- (3) Brunnet R.C, Hazardous Waste incineration, McGraw Hill Inc
- (4) Clark R.S. marine Pollution, Canderson Press, Oxford (TB)
- (5) De A.K. Environmental Chemistry, Wiley Eastern ltd.
- (6) Down to Earth, Centre for Science and Environment
- (7) Gleick H.P, Water in Crisis, Pacific Institute for Studies in Dev. Environment and Security, Stockholm Env. Instt, Oxford Univ. Press
- (8) Hawkins R.E. Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay
- (9) Heywood VII and Watson, R.T. 1995, Global Biodiversity Assessment, Cambridge Univ. Press
- (10) Jadhav II and Bhosale V.M. 1995, Environmental Protection Laws, Himalaya Publishing House, Delhi
- (11) Sharma B.K. 2001, Environmental Chemistry, Goel Pub. House, Meerut
- (12) Trivedi. R.K, Handbook of Environmental Laws Rules, Guidelines, Compliances and Standards Vol I and II Enviro Media

(13) Wagner K.D, Environmental Management, W.B. Saunders Co Philandering, USA

B.Com, Semester – IV

Course – 403: Corporate Accounting – II

Course Objective: To enable the students to understand principles and procedure of preparing accounts of specialized corporate sectors

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 5 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Liquidation of Companies** (8 hours): Meaning, Types of Liquidation, Order of Payment, Calculation of Liquidator's Remuneration, and Preparation of Liquidators Final Statement of Account.
- II. **Banking Company Final Accounts** (16 hours): Business of Banking Companies, Some Important Provisions of Banking Regulation Act of 1949 – Minimum Capital and Reserves, Restriction on Commission, Brokerage, Discounts, Statutory Reserves – Cash Reserves, Books of Accounts, Special features of Bank Accounting, Final Accounts - Balance Sheet and Profit and Loss Account – Interest on Doubtful Debts – Rebate on Bill Discounted, Acceptance, Endorsement and other Obligations and Problems as per New Provisions
- III. **Life Insurance Company Final Accounts** (20 hours): Meaning of Life Insurance, Accounting Concepts relating to Insurance Companies, Preparation of Final Accounts of Life Insurance Companies – Revenue Account and Balance Sheet, and Calculation of Profit by preparing Valuation Balance Sheet.
- IV. **General Insurance Company Final Accounts** (14 hours): Meaning of General Insurance, Differences between Life Insurance and General Insurance – Fire Insurance, Marine Insurance and Accident Insurance; and Preparation of Revenue Account, Profit and Loss Account and Balance Sheet (vertical format).
- V. **Social Responsibility Accounting** (6 hours): Meaning and Definition, Features and Objectives of Social Responsibility Accounting (theory only).

Skill Development Activities:

- (1) Collect and fill the share application form of a limited company
- (2) Collect Prospectus of a company and identify its salient features
- (3) Collect annual report of a company and list out its assets and liabilities
- (4) Collection of latest final accounts of a company and find out the intrinsic value of shares
- (5) Collect the annual reports of a company and calculate the value of goodwill under different methods

Recommended Books for Reference:

- (1) J Madegowda, Dr Giridhar, K V, and Inchara P M Gowda, Advanced Financial Accounting (Volume – IV), Himalaya Publishing House, Mumbai
- (2) Arulanandam and Raman, Corporate Accounting –II
- (3) Anil Kumar, Dr B. Mariyappa, Financial Accounting, HPH
- (4) Dr. S.N. Maheswari, Financial Accounting
- (5) Soundarajan. A and K. Venkataramana, Corporate Accounting, VBH
- (6) S. P. Jain and K. L. Narang, Corporate Accounting
- (7) S. Bhat Corporate Accounting.
- (8) S P Iyengar, Advanced Accountancy, Sultan Chand
- (9) R L Gupta, Advanced Accountancy.

(10) Shukla and Grewal, Financial Accounting

B.Com, Semester – IV

Course – 404: Management of Banking Operations

Course Objective: To acquaint students with the different banking operations

Pedagogy: combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit Course Inputs

- I. **Banker and Customer** (16 hours): Introduction, Meaning and Definition of Banker and Customer, General and Special relationship between Banker and Customer, Special types of Customers – Minor, Joint Account, Partnership, Joint Stock Company, Trustee, Clubs and Associations.
- II. **Types of Accounts and Lending of Fund** (14 hours): Savings Bank Account, Current Account and Fixed Deposit Account – Features, Procedure for opening these Accounts; Lending of Funds – Different types of Loans, Overdrafts, Discounting of Bills, Cash Credit and Principles of Bank Lending.
- III. **Negotiable Instruments** (14 hours): Introduction, Meaning and Definition, Features, Kinds of Negotiable Instruments - Meaning, Definition and Features of Promissory Notes, Bills of Exchange and Cheques; Crossing of Cheques, Types of Crossing, Material Alteration, Endorsements - Meaning, Essentials and Kinds of Endorsement.
- IV. **Banking Operations** (12 hours): Collecting Banker – Meaning, Duties and Responsibilities of Collecting Banker, Holder for Value, Holder in Due Course, Statutory Protection to Collecting Banker; Paying Banker – Meaning, Precautions, Statutory protection to the Paying Banker, Dishonor of Cheques, Grounds for Dishonor, and Consequences of wrongful Dishonor of Cheques.
- V. **Banking** (8 hours): New Technology in Banking, e-Services, Debit and Credit Cards, Internet Banking, ATM, Electronic Fund Transfer, MICR, RTGS, NEFT, DEMAT. e-Banking, Core Banking and Mobile Banking.

Skill Development Activities:

- (1) Collect and fill account opening form of SB Account or Current Account
- (2) Collect and fill pay in slip of SB Account or Current Account
- (3) Draw specimen of Demand Draft
- (4) Draw different types of endorsement of cheques
- (5) Draw specimen of Travellers Cheques/Gift cheques/Credit cheques
- (6) List various customer services offered by atleast two banks of your choice

Recommended Books for Reference:

- (1) Gordon and Natarajan, Banking Theory Law and Practice, HPH
- (2) S. P Srivastava, Banking Theory and Practice, Anmol Publications
- (3) Tandan M.L, Banking Law and Practice in India, Indian Law House
- (4) Sheldon H.P, Practice and Law of Banking
- (5) K. Venkataramana, Banking Operations, SHBP
- (6) Kothari N. M, Law and Practice of Banking
- (7) Neelam C Gulati, Principles of Banking Management
- (8) Maheshwari. S.N, Banking Law and Practice, Vikas Publication
- (9) Shekar. K.C, Banking Theory Law and Practice, Vikas Publication
- (10) Dr. Alice Mani, Banking Law and Operation, SBH

B.Com, Semester – IV
Course – 405: Computer Applications in Business

Course Objective: To enable the students to learn the Accounting Package Tally and SQL Programs.

Pedagogy: combination of lectures, assignments, practical and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction** (10 hours): Meaning and Definition, Characteristics of Computers, Types of Computers, Application of Computers in Business Operating System – Meaning and Functions of Operating System; Introduction to Windows OS, Computer Memory – Primary and Secondary, RAM and ROM.
- II. **Tally ERP 9.0** (14 hours): Introduction, Features, Advantages, Basic Rules - Real, Personal and Nominal Accounts, Assets and Liabilities, Debtors and Creditors, Menus in Tally, Company Creation, Company Info Menu, Creating Inventory of Products, Company Features (F11) and Configuration of Tally (F12), Gateway of Tally Menu, Master, Transaction, Import and Report.
- III. **Software Support for GST** (8 hours): Introduction, Features, Concept, Supporting Software, GST Working Principles in Tally, Power and Functions, GST Group Creation in Tally, GST adapting in Goods or Stock Creation Section, Creating CGST, SGST, IGST, Ledgers, and GST Entry System in Tally.
- IV. **Accounting Ledger and Vouchers** (12 hours): Predefined Accounting Groups, Primary Groups and Sub Groups, Steps for Creating - Alter and Delete Ledgers and Groups, Types of Ledgers, Types of Vouchers, Rules of Vouchers Entry, Balance Sheet, Profit and Loss Account, Trial Balance, Stock Summary, Computation of GST and TDS, and Exercises for making Voucher Entries.
- V. **Introduction to ORACLE** (14 hours): SQL Meaning, Concepts, Commands, Data Definition Commands, Data Manipulation Commands, SQL*Plus Editing Commands, Create Table, Insert Integrity Constraints, Primary Key, Secondary Key, Aggregate Functions, Select, Delete Form, and Update Order Commands.
- VI. **SQL *Plus Reports** (6 hours): Additional Operators: Like Between, in, Referential Integrity, on Delete Cascade, Join Operation - Inner Join, Outer Join, Alter Table, SQL Clauses - Where Clause, Order By, Group by Clause, Having Clause, Sub Queries, Introduction to PL/SQL, and Simple Programs.

Skill Development Activities:

- (1) Write steps for creating a new company in Tally
- (2) Solve the two exercise problems with GST
- (3) Simple Programs - Mathematical Calculation, Simple and Compound Interest, Area of Circle, Triangle, Biggest and Smallest number
- (4) Write down the student data base table in SQL Query
- (5) Steps for creating GST in Tally with example

Recommended Books for Reference:

- (1) Ashok K Nandani, Advanced Tally 9.0 ERP, 2017 Edition.
- (2) Niranjana Shrivastava, Computer Application In Management (Dreamtech Press)
- (3) P. Mohan, Computer Application Business (Himalaya Publication)
- (4) Sanjay Saxena, A First Course in Computers (Vikas Publishing House)
- (5) Ivan Bayross: Oracle – 7 (BPB Publications)

B.Com, Semester – IV
Course – 406: Business Regulations

Course Objective: To acquaint students with e different business laws and their interruptions

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 3 Maximum Marks: 100 Examination Duration: 3 hours

Unit Course Inputs

- I. **Introduction to Business Laws** (8 hours): Introduction, Nature of Law, Meaning and Definition of Business Laws, Scope and Sources of Business Laws.
- II. **Contract Laws** (18 hours): Indian Contract Act, 1872 - Definition of Contract, Essentials of a Valid Contract, Classification of Contracts, Discharge of Contracts, Remedies for Breach of Contract; Indian Sale of Goods Act, 1930 - Definition of Contract of Sale, Essentials of Contract of Sale, Conditions and Warrantees, Rights and Duties of Buyer, and Rights of an Unpaid Seller.
- III. **Competition and Consumer Laws** (14 hours): The Competition Act, 2002 - Objectives of Competition Act, Features of Competition Act, CAT, Offences and Penalties under the Act, Competition Commission of India; Consumer Protection Act, 1986 - Definition of the Terms Consumer, Consumer Dispute, Defect, Deficiency, Unfair Trade Practices and Services; Rights of the Consumer under the Act, Consumer Redressal Agencies – District Forum, State Commission, and National Commission.
- IV. **Economic Laws** (12 hours): Indian Patent Laws and WTO Patent Rules - Meaning of IPR, Invention and Non-Invention, Procedure to get Patent, Restoration and Surrender of Lapsed Patent, Infringement of Patent; FEMA 1999 - Objects of FEMA, Salient Features of FEMA, Definition of Important Terms - Authorized Person, Currency, Foreign Currency, Foreign Exchange, Foreign Security, Offences and Penalties.
- V. **Environmental Law** (8 hours): Environment Protection Act, 1986 - Objects of the Act, Definitions of Important Terms - Environment, Environment Pollutant, Environment Pollution, Hazardous Substance and Occupier, Types of Pollution, and Rules and Powers of Central Government to Protect Environment in India.

Skill Development Activities:

- (1) Prepare a chart showing sources of business laws and Indian Constitution Articles having economic significance
- (2) Draft an agreement on behalf of a MNC to purchase raw materials indicating therein terms and conditions and all the essentials of a valid contract
- (3) Draft an application to the Chief Information Officer of any government office seeking information about government spending
- (4) Draft digital signature certificate
- (5) Draft a complaint to District Consumer Forum on the deficiency of service in a reputed corporate hospital for medical negligence
- (6) Collect leading cyber-crime cases and form groups in the class room and conduct group discussion
- (7) Draft a constructive and innovative suggestions note on global warming reduction

Recommended Books for Reference:

- (1) K. Aswathappa, Business Laws, HPH
- (2) Bulchandni, Business Laws, HPH
- (3) K. Venkataramana, Business Regulations, SHBP
- (4) Kamakshi P and Srikumari P, Business Regulations, VBH
- (5) N.D. Kapoor, Business Laws, Sultan Chand publications

- (6) S.S Gulshan, Business Law
- (7) S.C. Sharma, Business Law, I.K International Publishers
- (8) Tulsion Business Law, TMH

B.Com, Semester – IV
Course – 407: Indian Constitution

Course Objective: To acquaint students with essential knowledge about Indian Constitution

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Framing of the Constitution and Major Features** (14 hours): Constituent Assembly at Work, Preamble and Salient Features, Citizenship, Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties.
- II. **Union and State Legislatures** (16 hours): Composition, Powers and Functions; Presiding Officers, Law Making Process, Committees of Parliament, Decline of Legislatures, and Reforms.
- III. **Union and State Executive** (16 hours): President and Vice-President – Elections, Powers and Functions; Prime Minister and Council of Ministers – Powers and Functions; Governor, Chief Minister and Council of Ministers – Powers and Functions; and Debate over Parliamentary and Presidential Forms of Government.
- IV. **Judiciary** (14 hours): Supreme Court and High Courts – Composition, Jurisdiction and Functions; and Judicial Activism.

Skill Development Activities:

- (1) List out the powers and functions of different levels of government
- (2) Understand the Union-State relations in India

Recommended Books for Reference:

- (1) D.D. Basu, Introduction to the Indian Constitution
- (2) A.S. Narang, Indian Constitution, Government and Politics
- (3) Nani Palkhivala, We, the People, UBS Publishers, New Delhi
- (4) A.G. Noorani, Indian Government and Politics
- (5) J.C. Johari, Indian Government and Politics Vol. I and II, Vishal, New Delhi
- (6) Granville Austin, The Indian Constitution – Corner Stone of a Nation, Oxford, New Delhi
- (7) M.U. Pylee, Constitutional Government in India
- (8) K.K. Ghai, Indian Constitution

B.Com, Semester – V
Course – 501: Financial Management

Course Objective: To acquaint students with the principles of mobilizing and utilizing financial resources by the industrial enterprises

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Financial Management** (10 hours): Introduction – Meaning of Finance, Business Finance, Finance Function, Aims of Finance Function; Organization Structure of Finance Department, Financial Management, Goals of Financial Management, Financial Decisions, Role of Financial Manager, Financial Planning - Steps in Financial Planning, Principles of sound Financial Planning, and Factors influencing sound Financial Plans.

- II. **Time Value of Money** (12 hours): Introduction – Meaning and Definition, Need, Future Value (Single Flow – Uneven Flow and Annuity), Present Value (Single Flow – Uneven Flow and Annuity), Doubling Period, Concept of Valuation - Valuation of Bonds, Debentures and Shares and Simple Problems.
- III. **Capital Structure** (12 hours): Introduction – Meaning of Capital Structure, Factors influencing Capital Structure, Optimum Capital Structure, Computation and Analysis of EBIT, EBT, EPS, Leverages and Simple Problems.
- IV. **Capital Budgeting** (16 hours): Introduction – Meaning and Definition of Capital Budgeting, Features, Significance, Process, Techniques - Payback Period, Accounting Rate of Return, Net Present Value, Internal Rate of Return and Profitability Index, and Simple Problems.
- V. **Dividend Policy** (8 hours): Introduction – Meaning and Definition, Determinants of Dividend Policy, Types of Dividends, Bonus Share, Dividend Theories - M.M Model, Walter's Model and Gordon's Model and Problems.
- VI. **Working Capital Management** (6 hours): Introduction, Concept of Working Capital, Significance of adequate Working Capital, Evils of excess or inadequate Working Capital, Determinants of Working Capital, Sources of Working Capital and Problems on determination of Working Capital.

Skill Development Activities:

- (1) Draw the organization chart of finance function of a company
- (2) Evaluate the NPV of an investment made in any one of the capital projects with imaginary figures for five years
- (3) Capital structure analysis of companies in different industries
- (4) Using imaginary figures, prepare an estimate of working capital requirements
- (5) Calculate dividend under MM Model with imaginary figures

Recommended Books for Reference:

- (1) Dr. B. Mariyappa, Financial Management, HPH
- (2) S N Maheshwari, Financial Management, Sultan Chand
- (3) Dr. Aswathanarayana T, Financial Management, VBH
- (4) K. Venkataramana, Financial Management, SHBP
- (5) Roy, Financial Management, HPH
- (6) Khan and Jain, Financial Management, TMH
- (7) S. Bhat, Financial Management
- (8) Sharma and Sashi Gupta, Financial Management, Kalyani Publication
- (9) I M Pandey, Financial Management. Vikas Publication
- (10) Prasanna Chandra, Financial Management, TMH
- (11) P.K Simha, Financial Management
- (12) M. Gangadhar Rao and Others, Financial management

B.Com, Semester – V Course – 502: Income Tax – I

Course Objective: To acquaint students with the application with principles and provisions of IT Act 1961 relating to assessment

Pedagogy: Combination of lectures, assignments and group discussions.

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Brief History of Indian Income Tax** (10 hours): Brief History of Income Tax, Definition, Assessment Year, Previous Year (including Exceptions), Assessee, Person,

- Income, Casual Income, Gross Total Income, Agricultural Income - Meaning and Classification of Capital and Revenue.
- II. **Exempted Income** (12 hours): Introduction, Exempted Incomes U/S 10 - restricted to Individual Assesse.
 - III. **Residential Status** (12 hours): Residential Status of an Individual, Determination of Residential Status, Incidence of Tax and Problems.
 - IV. **Income from Salary** (16 hours): Meaning, Definition, Basis of Charge, Advance Salary, Arrears of Salary, Allowances, Perquisites, Provident Fund, Profits in Lieu of Salary, Gratuity, Commutation of Pension, Encashment of Earned Leave, Compensation for Voluntary Retirement; Deductions from Salary U/S 16 and Problems on Income from Salary.
 - V. **Deduction** (8 hours): Under Sections 80C to 80U--80C, 80CCD, 80D, 80DD, 80E, 80G, 80GG, 80GGA, 80QQB, 80U and Problems on 80 C to 80 G only.
 - VI. **Income Tax Authorities** (6 hours): Income Tax Authorities - Powers and Functions of CBDT, CIT and A.O.

Skill Development Activities:

- (1) Form No. 49A (PAN) and 49B
- (2) Filling of Income Tax Returns
- (3) List of enclosures to be made along with IT returns (with reference to salary)
- (4) Preparation of Form 16
- (5) Computation of Income Tax and the Slab Rates
- (6) Computation of Gratuity

Recommended Books for Reference:

- (1) Dr. B. Mariyappa, Income Tax – I, HPH
- (2) Dr. Vinod K. Singhanian: Direct Taxes – Law and Practice, Taxman Publication
- (3) B.B. Lal: Direct Taxes, Konark Publisher (P) ltd.
- (4) Dr. Mehrotra and Dr. Goyal: Direct Taxes – Law and Practice, Sahitya Bhavan Publication
- (5) Dinakar Pagare: Law and Practice of Income Tax, Sultan Chand and Sons
- (6) Gaur and Narang, Income Tax
- (7) Dr. V. Rajesh Kumar and Dr. R. K. Sreekantha, Income Tax – I, Vittam Publications
- (8) 7 Lectures, Income Tax – I, VBH

B.Com, Semester – V

Course – 503: Business Statistics – I

Course Objective: To acquaint students with fundamental techniques and tools of business statistics

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Statistics** (10 hours): Meaning, Definitions, Functions, Scope and Limitations of Statistics and Distrust of Statistics.
- II. **Data and its Collection** (12 hours): Types of Data – Primary and Secondary Data – Methods for Collection of Primary Data – Sources of Secondary Data – Classification – Meaning and Types; Tabulation – Meaning, Rules for Construction of Tables, Parts of Statistical Table and Problems on Tabulation.
- III. **Diagrammatic and Graphic Representation of Statistical Data** (14 hours): Meaning, Types of Diagrams, Simple, Multiple, Subdivided and Percentage,

- Histogram – Location of Mode through Histogram and Frequency Polygon; and Ogive Curves – Location of Median and Quartiles through Ogive Curves.
- IV. **Measures of Central Tendency** (16 hours): Meaning and Definition, Types of Averages – Arithmetic Mean (Simple and Weighted), Median, Mode (excluding missing Frequency problems).
- V. **Measures of Dispersion** (6 hours): Meaning, Absolute and Relative Measures of Dispersion, Types of Dispersion – Range, Quartile Deviation, Standard Deviation, and Co-Efficient of each Method.
- VI. **Skewness** (6 hours): Meaning, Types of Skewness, Measures of Skewness, Absolute and Relative Measures of Skewness, Karl Pearson's Coefficient of Skewness and Bowley's Coefficient of Skewness.

Skill Development Activities:

- (1) Draw a blank table showing different attributes
- (2) Collect marks scored by 50 students in an examination and prepare a frequency distributions table
- (3) Collect data relating to prices of shares of two companies for ten days and ascertain which company's share prices is more stable
- (4) Collect the run scored by the two batsmen in ten one-day international cricket matches, find who is better run getter and who is more consistent
- (5) Select 10 items of daily-consumed products and collect base year quantity, base year price and current year price. Calculate Cost of Living Index

Recommended Books for Reference:

- (1) Anand Sharma, Statistics For Management, HPH
- (2) S P Gupta: Statistical Methods- Sultan Chand, Delhi
- (3) D.P Apte, Statistical Tools for Managers
- (4) Dr. B N Gupta, Statistics (Sahitya Bhavan), Agra
- (5) S.C Gupta: Business Statistics, HPH
- (6) N.V.R Naidu : Operation Research I.K. International Publishers
- (7) Ellahance: Statistical Methods, Kitab Mahal
- (8) Sanchethi and Kapoor: Business Mathematics, Sultan Chand
- (9) Veerachamy: Operation Research I.K. International Publishers
- (10) S. Jayashankar: Quantitative Techniques for Management
- (11) Chikoddi and Satya Prasad: Quantitative Analysis for Business Decision, HPH
- (12) Dr. Alice Mani: Quantitative Analysis for Business Decisions - I, SBH

B.Com, Semester – V

Course – 504: Cost Accounting

Course Objective: To acquaint students with elements of cost and also the reconciliation procedure

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4

Maximum Marks: 100

Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Cost Accounting** (8 hours): Meaning and Definition of Cost, Costing, Cost Accounting and Cost Accountancy, Objectives, Scope, Advantages and Limitations of Cost Accounting, Differences between Financial Accounting and Cost Accounting, Methods and Techniques of Cost Accounting.
- II. **Elements of Cost** (12 hours): Cost Unit, Cost Centre, Classification of Costs, Problems on Cost Sheet (including Job and Batch Cost Sheet), Tenders and

Quotations.

- III. **Material Cost Control** (12 hours): Materials - Meaning and Types, Material Cost Control - Meaning and Objectives, Purchase of Materials – Centralized and Decentralized Purchasing, Purchase Procedure, Stores Control - Meaning and Techniques, Fixation of Stock Levels, EOQ, ABC Analysis, VED Analysis, Just in Time, Perpetual Inventory System, Bin Card, Stores Ledger, Pricing of Material Issues - FIFO, LIFO, Simple Average and Weighted Average Methods, and Problems thereon.
- IV. **Labour Cost Control** (12 hours): Labour - Meaning and Types; Cost Control, Time Keeping and Time Booking, Treatment of Idle Time and Over Time, Labour Turnover, Methods of Wage Payment - Time Rate, Piece Rate and Incentives Plans - Halsey Plan, Rowan Plan, Emerson's Efficiency Plan; Statement of Wage Sheet, and Problems thereon.
- V. **Overhead Cost Control** (12 hours): Meaning, Classification of Overheads, Allocation and Apportionment of Overheads, Primary Overhead Distribution Summary, Secondary Overhead Distribution Summary, Re-apportionment of Overheads - Direct Distribution, Step Ladder Method; Absorption of Overheads – Methods of Absorption - Problems on Allocation, Apportionment, Re-apportionment and Absorption of Overhead Expenses including Machine Hour Rate.
- VI. **Reconciliation of Cost and Financial Accounts** (8 hours): Meaning of Reconciliation, Need for Reconciliation, Reasons for differences in Profit or Loss shown by Cost Accounts and Financial Accounts, and Problems on Reconciliation Statement including Memorandum Reconciliation Account.

Skill Development Activities:

- (1) Identification of elements of cost in services sector by visiting any service provider/ providing unit
- (2) Cost estimation for making a proposed product
- (3) Draft the specimen of any two documents used in material account
- (4) Collection and classification of overheads in an organization on the basis of functions
- (5) Prepare a reconciliation statement with imaginary figures

Recommended Books for Reference:

- (1) J. Made Gowda, Cost Accounting, Himalaya Publishing House
- (2) M V Shukla – Cost and Management Accounting
- (3) N.K. Prasad: Cost Accounting, Books Syndicate Pvt. Ltd.
- (4) Nigam and Sharma: Cost Accounting, HPH
- (5) Khanna Pandey and Ahuja – Practical Costing, S Chand
- (6) Soundarajan A and K. Venkataramana, Cost Accounting, SHBP

B.Com, Semester – V

Course – 505: Advanced Accounts

Course Objective: To acquaint students with accounting for corporate restructuring

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Mergers and Acquisitions** (22 hours): Meaning of Amalgamation and Acquisition, Types of Amalgamation – Amalgamation in the nature of Merger – Amalgamation in the nature of Purchase - Methods of Purchase Consideration – Calculation of Purchase Consideration (Ind AS 103) (Old AS14), Net Asset Method - Net Payment Method,

Accounting for Amalgamation - Entries and Ledger Accounts in the Books of Transferor Company and Transferee Company and Preparation of New Balance Sheet (Vertical Format).

- II. **Internal Reconstruction** (10 hours): Meaning – Objective – Procedure – Form of Reduction – Passing of Journal Entries – Preparation of Reconstruction Accounts – Preparation of Balance Sheet after Reconstruction (Vertical Format) and Problems.
- III. **Holding Company Accounts** (16 hours): Meaning of Holding Company and Subsidiary Companies – Concepts of Minority Interest – Majority Interest – Capital Profit – Revenue Profit – Cost of Control – Unrealized Profit included in Stock and Problems on Holding Company Accounts (excluding Cross and Chain Holding).
- IV. **Investment Accounting** (12 hours): Introduction – Classification of Investment – Cost of Investment – Cum-Interest and Ex-Interest – Securities – Bonus Shares - Right Shares – Disposal of Investment – Valuation of Investments – Procedures of Recording Shares and Problems.
- V. **Human Resources Accounting** (4 hours): Meaning, Objectives, Methods, Advantages and Limitations and problems thereon.

Skill Development Activities:

- (1) Calculation of purchase consideration with imaginary figures
- (2) List any five cases of amalgamation in the nature of merger or acquisition of Joint Stock Companies
- (3) List out legal Provisions in respect of internal reconstruction
- (4) Narrate the steps for preparation of consolidated balance sheet

Recommended Books for Reference:

- (1) Dr. B. Mariyappa – Advanced Corporate Accounting, HPH
- (2) Arulanandam and Raman; Corporate Accounting-II, HPH
- (3) Roadmap to IFRS and Indian Accounting Standards by CA Shibarama Tripathy
- (4) S.N. Maheswari , Financial Accounting, Vikas
- (5) Soundarajan A and K. Venkataramana, Advanced Corporate Accounting, SHBP
- (6) RL Gupta, Advanced Accountancy, Sultan Chand
- (7) K.K Verma – Corporate Accounting
- (8) Jain and Narang, Corporate Accounting
- (9) Tulsian, Advanced Accounting,
- (10) Shukla and Grewal – Advanced Accountancy, Sultan Chand

B.Com, Semester – V

Course – 506: Goods and Services Tax

Course Objective: To equip students with the principles and provisions of Goods and Services Tax (GST) - implemented from 2017 under the notion of One Nation, One Tax and One Market. And also to provide an insight into practical aspects and apply the provisions of GST laws to various situations.

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 **Maximum Marks:** 100 **Examination Duration:** 3 hours

Unit

Course Inputs

- I. **Introduction to Goods and Services Tax (GST)** (8 hours): Introduction to GST, Meaning and Definition, Objectives and basic scheme of GST, Salient features of GST – Subsuming of taxes – Benefits of implementing GST – Constitutional amendments - Structure of GST (Dual Model) – Central GST – State/Union Territory GST – Integrated GST; GST Council - Structure, Powers and Functions, and

Provisions for amendments.

- II. **Goods and Services Act, 2017** (8 hours): CGST Act, SGST Act (Karnataka State), and IGST Act - Salient features of CGST Act, SGST Act (Karnataka State), IGST Act. Meaning and Definition: Aggregate turnover, Adjudicating authority, Agent, Business, Capital goods, Casual Taxable Person, Composite supply, Mixed supply, Exempt supply, Outward supply, Principal Supply, Place of Supply, Supplier, Goods, Input Service Distributor, Job work, Manufacture, Input tax, Input tax credit, Person, Place of business, Reverse charge, Works contract, Casual taxable person, Non-resident person; Export of goods or services, Import of goods or services, Intermediary, Location of supplier of service, Location of recipient of service and simple problems on Composite Supply and Mixed Supply
- III. **Procedure and Levy under GST** (32 hours): Registration under GST, Procedure for registration, Persons liable for registration, Persons not liable for registration, Compulsory registration, Deemed registration, Special provisions for Casual taxable persons and Non-resident taxable persons; Exempted goods and services, Rates of GST.
 Procedure relating to Levy (CGST and SGST): Scope of supply, Tax liability on Mixed and supply, Time of supply of goods and services Value of taxable supply, Computation of taxable value and tax liability on Goods and Services.
 Procedure relating to Levy: (IGST): Inter-state supply, intra-state supply, Zero rates supply, Value of taxable supply – Computation of taxable value and tax liability; Input tax Credit - Eligibility, Apportionment, Inputs on capital goods, Distribution of credit by Input Service Distributor (ISD) – Transfer of Input tax credit and simple problems on utilization of input tax credit.
- IV. **Assessment and Returns** (10 hours): Meaning, types of assessment - First return, Claim of input tax credit, Matching reversal and reclaim of input tax credit, Annual return and Final return and Problems on Assessment of tax and tax liability.
- V. **GST and Technology** (6 hours): GST Network: Structure, Vision and Mission, Powers and Functions; Goods and Service Tax Suvidha Providers (GSP): Concept, Framework and Guidelines and architecture to integrate with GST system; and GSP Eco System. (theory only).

Skill Development Activities:

- (1) Collect GST Returns form and fill with imaginary figures
 GSTR-3B (Monthly Returns)
 GSTR-1 (Details of Outward supplies of Goods or Services)
 GSTR-2 (Inward Supplies received by tax payer)
- (2) Visit your locality shops and collect information relating to tax rate applicable to them
- (3) Collect information about different tax rates for goods and services and write five examples for each tax rate
- (4) Visit Bank and Insurance Company, collect information relating to GST applicable to them for different services
- (5) Collect information relating to RCM (Reverse Charge Mechanism) for different expenditures

Recommended Books for Reference:

- (1) GST Act 2017, Karnataka Law and Journal Publications
- (2) GST, Taxman Publications
- (3) Introduction to GST, Department of GST New Delhi
- (4) Introduction to GST, Dr B G Bhaskar

- (5) Introduction to GST, Dr M Mariyappa

B.Com, Semester – V

Course – 508: Logical and Analytical Reasoning

Course Objective: To acquaint students with reasoning and analytical ability

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 2 Maximum Marks: 50 Examination Duration: 1½ hours

Unit

Course Inputs

- I. **Logical Reasoning** (6 hours): Venn Diagram, Logical Sufficiency and Seating Arrangement.
- II. **Intellectual Reasoning** (7 hours): Blood Relations, D Calendar, Series, Coding and Decoding.
- III. **Verbal and Non-verbal Reasoning** (4 hours): Verbal Alphabetical Analogy, Puzzles and Abstract Reasoning.
- IV. **Analytical Reasoning** (5 hours): Cause and Effective Conclusions, Statement and Arguments and Statement and Assumptions.
- V. **Mathematical Reasoning** (6 hours): Problems related to Wages, Speed – Distance, Percentage and Average, Ratio and Proportion.
- VI. **Data Interpretation** (4 hours): Problems on Tables and Graph.

Skill Development Activities:

- (1) Draw Venn Diagram with imaginary Figures
- (2) Draw Coding and Decoding programs with imaginary figures
- (3) Calculate speed of a train with imaginary figures
- (4) Draw Tables and Chart with Imaginary figures

Recommended Books for Reference:

- (1) Agarwal, Quantitative Reasoning.
- (2) Dr. Giridhar K.V. Logical and Analytical Reasoning, 5th Edition, College Book House
- (3) M. N. Tyra, Speed Mathematics

B.Com, Semester – VI

Course – 601: International Financial Reporting Standards

Course Objective: To acquaint students with recent accounting standards

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to IFRS** (8 hours): Meaning and Scope of IFRS, Need for IFRS, GAAP Vs IAS, IAS Vs IFRS, Nature and Operations of IASB and IFRIC, Status and use of IFRS around the World.
- II. **Profit Presentation** (8 hours): Presentation of Financial Statements (IAS - 1) Revenue (IAS - 18) and Accounting Policies, Changes in Accounting Estimates and Errors (IAS - 8)
- III. **Group Accounting** (12 hours): Consolidated Financial Statements and Accounting for Investment in Subsidiaries (IAS - 27), Accounting for Investments in Associates (IAS - 28), Joint Ventures (IAS - 31), and Business Combinations (IFRS - 3)
- IV. **Disclosure** (14 hours): Related Party Disclosures (IAS - 24), Earning per Share (IAS - 33) and Interim Financial Reporting (IAS - 34), and First Time Adoption of IFRS (IFRS - 1)
- V. **Asset Recognition and Measurement** (14 hours): Property, Plant and Equipment

(IAS - 16), Intangible Assets (IAS - 38), Investment Property (IAS - 40), Inventories (IAS - 2), and Leases (IAS - 17).

- VI. **Accounting for Liabilities** (8 hours): Share Based Payment (IFRS - 2), Provisions, Contingent Assets and Contingent Liabilities (IAS - 37), and Events after the Reporting Period (IAS - 10).

Skill Development Activities:

- (1) Prepare a note on convergence of Indian Accounting Standards with IFRS
- (2) Analysis of published financial statements for at-least two types of stakeholders
- (3) Comment on recent developments/exposure draft in IFRS
- (4) Preparation of notes to accounts for non-current assets
- (5) Assignment on social reporting
- (6) Preparation of Consolidated Financial Statement of any two existing companies
- (7) Disclosure of change in equity in the annual reports of any two select companies

Recommended Books for Reference:

- (1) IFRSs, Taxman Publications (Blue book)
- (2) IFRS, Barry Larking, Taxman Publications
- (3) IFRS, T.P. Ghosh, Taxman Publications
- (4) IFRS and Ind AS, Kamal Garg, Bharat publishers
- (5) International Accounting, Mohapatra A.K. Das

B.Com, Semester - VI
Course – 602: Income Tax – II

Course Objective: To acquaint students about the computation of different sources of income

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4

Maximum Marks: 100

Examination Duration: 3 hours

Unit

Course Inputs

- I. **Income from House Property** (14 hours): Basis of Charge – Deemed Owners – Exempted Incomes from House Property – Annual Value – Determination of Annual Value – Treatment of Unrealized Rent – Loss Due to Vacancy – Deductions from Annual Value and Problems on Income from House Property.
- II. **Profits and Gains of Business and Profession** (Individual Assessee) (16 hours): Meaning and Definition of Business, Profession – Vocation - Expenses expressly Allowed – Allowable Losses – Expenses expressly Disallowed – Expenses Allowed on Payment Basis - Problems on Business relating to Sole Trader and Problems on Profession relating to Chartered Accountant, Advocate and Medical Practitioner.
- III. **Capital Gains** (12 hours): Basis of Charge – Capital Assets – Transfer of Capital Assets – Computation of Capital Gains –Exemptions U/S 54, 54B, 54D, 54EC, 54F and Problems on Capital Gains.
- IV. **Income from other Sources** (10 hours): Incomes – Taxable under the head ‘Other Sources’ – Securities – Kinds of Securities – Rules for Grossing Up – Ex-Interest Securities – Cum-Interest Securities – Bond Washing Transactions and Problems on Income from Other Sources.
- V. **Set-off and Carry Forward of Losses, Computation of Total Income and Tax Liability** (8 hours): Meaning – Provision for Set-off and Carry Forward of Losses (theory only); Computation of Total Income and Tax Liability of an Individual Assessee (excluding Salary Income).
- VI. **Filing of Returns and Assessment Procedure** (4 hours): PAN, TAN, E-Filing and IT Challan.

Skill Development Activities:

- (1) Table of rates of Tax deducted at source
- (2) Filing of IT returns of individuals
- (3) List of enclosures for IT returns
- (4) Due date for filing of returns
- (5) Income tax proposal as per the recent union budget

Recommended Books for Reference:

- (1) Dr. B. Mariyappa, Income Tax- II, HPH
- (2) Dr. Vinod K. Singhanian: Direct Taxes – Law and Practice, Taxman publication
- (3) B.B. Lal: Direct Taxes, Konark Publisher (P) ltd
- (4) Dr. Mehrotra and Dr. Goyal: Direct Taxes – Law and Practice, Sahitya Bhavan Publication
- (5) Dinakar Pagare: Law and Practice of Income Tax, Sultan Chand and sons
- (6) Gaur and Narang: Income Tax
- (7) Lectures on Income Tax – I, VBH
- (8) Dr. V. Rajesh Kumar and Dr. R. K. Sreekantha: Income Tax – I, Vittam Publications.

B.Com, Semester – VI**Course – 603: Business Statistics – II**

Course Objective: To acquaint students about practical application of statistical tools

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Correlation Analysis** (14 hours): Meaning – Methods of Studying Correlation, Karl Pearson's Co-efficient of Correlation (Simple Correlation and Table Correlation) and Probable Error.
- II. **Regression Analysis** (18 hours): Meaning - Correlation Vs Regression, Determination of Regression Co-efficient, Framing Regression Equations, Simple Regression and Regression for Grouped Data.
- III. **Index Numbers** (12 hours): Meaning and Definition – Uses – Classification – Construction of Index Numbers – Methods of constructing Index Numbers – Simple Aggregative Method – Simple Average of Price Relative Method – Weighted Index Method – Fisher's Ideal Method (including TRT and FRT) – Consumer Price Index and Problems.
- IV. **Interpolation and Extrapolation** (12 hours): Meaning – Utility – Algebraic Methods – Binomial and Newton's Methods only.
- V. **Association of Attributes** (4 hours): Meaning – Correlation Vs Association of Attributes, Methods of Studying Association – Yule's Method only
- VI. **Statistical Quality Control** (4 hours): Meaning – Objectives – Control Charts and their Uses, Types of Control Charts, Construction Charts, Construction of Mean and Range Charts only.

Skill Development Activities:

- (1) Collect age statistics of 10 newly married couples and compute correlation coefficient
- (2) Collect age statistics of 10 newly married couples and compute regression equations; estimate the age of bride when age of bridegroom is given
- (3) Select 10 items of daily consumed products and collect base year quantity, base year price and current year price. Calculate Cost of Living Index
- (4) Collect the sales or production statistics of a company for five years and extrapolate

the production or sales for the 6th year

- (5) Draw a mean chart of any company to ascertain the quality of the product

Recommended Books for Reference:

- (1) Anand Sharma : Statistics for Management, HPH
- (2) S P Gupta: Statistical Methods- Sultan Chand, Delhi
- (3) D.P Apte, Statistical Tools for Managers
- (4) Dr. B N Gupta: Statistics, Sahitya Bhavan, Agra.
- (5) S.C Gupta: Business Statistics, HPH
- (6) N.V.R Naidu: Operation Research I.K. International Publishers
- (7) Ellahance: Statistical Methods, Kitab Mahal
- (8) Sanchethi and Kapoor: Business Mathematics, Sultan Chand
- (9) Veerachamy: Operation Research I.K. International Publishers
- (10) S. Jayashankar: Quantitative Techniques for Management
- (11) Chikoddi and Satya Prasad: Quantitative Analysis for Business Decision, HPH
- (12) Dr. Alice Mani: Quantitative Analysis for Business Decisions - I, SBH

B.Com, Semester - VI

Course – 604: Cost Accounting - Methods and Techniques

Course Objective: To acquaint students about methods and techniques of cost accounting

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Contract Costing** (10 hours): Meaning, Nature and Types of Contract, Difference between Contract Costing and Job Costing, Concepts of Escalation Clause, Retention Money, Profit on Incomplete Contracts and Problems.
- II. **Process Costing** (12 hours): Meaning, Nature and Applicability, By-Products and Joint Products and Problems on Process Costing including Joint Products and By-Products.
- III. **Operating Costing** (10 hours): Meaning and Applicability of Operating Costing, Operating Cost and its Classification, Problems on Preparation of Operating Cost Sheet (only Transport Undertakings).
- IV. **Marginal Costing** (14 hours): Meaning, Basic Concepts, Assumptions, Marginal Cost Statements, Contribution, BE Analysis, P/V Ratio, BEP, Margin Of Safety and Problems.
- V. **Standard Costing** (10 hours): Meaning, Definitions, Differences between Standard Costing and Budgetary Control, Analysis of Variances, Problems on Material Cost Variance - Material Price Variance, Material Usage Variance; Labour Cost Variance, Labour Rate Variance, and Labour Efficiency Variance.
- VI. **Activity Based Costing and Learning Curve Theory** (8 hours): Concept of Activity Based Costing, Cost Drivers and Cost Pools, Allocation of Overheads under ABC – Characteristics, Implementation and Benefits of ABC; Concept and Phases of Learning Curve, Graphical Representation, Learning Curve Applications and Factors affecting Learning Curve (theory only)

Skill Development Activities:

- (1) Listing of industries located in your area and methods of costing adopted by them
- (2) List out materials used in any two organizations
- (3) Preparation with imaginary figures composite job cost statement
- (4) Preparation of activity based cost statement

- (5) Prepare a chart showing the apportionment of overheads under ABC

Recommended Books for Reference:

- (1) J. Madegowda, Cost Accounting, Himalaya Publishing House
- (2) J. Madegowda, Marginal Costing for Managerial Decisions, Prateeksha Publications
- (3) J. Madegowda, Cost Management, Himalaya Publishing House
- (4) S P Iyengar, Cost Accounting
- (5) Nigam and Sharma, Advanced Costing
- (6) B.S. Raman, Cost Accounting
- (7) Dr. B. Mariyappa, Cost Accounting Methods - HPH
- (8) M.N. Arora, Cost Accounting
- (9) Ashish K Bhattacharyya: cost accounting for business managers
- (10) N. Prasad, Costing
- (11) Palaniappan and Hariharan: Cost Accounting, I.K. International Publishers
- (12) Jain and Narang, Cost Accounting
- (13) Ravi M. Kishore – Cost Management
- (14) Charles T Horngren, George Foster, Srikant M. Data, Cost Accounting: A Managerial Emphasis
- (15) Rathnam: Cost Accounting

B.Com, Semester - VI

Course – 605: Management Accounting

Course Objective: To acquaint students with necessary knowledge of practical aspects of Management Accounting

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 5 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Management Accounting** (10 hours): Meaning and Definition of Management Accounting, Scope and Objectives of Management Accounting – Differences between Management Accounting and Financial Accounting – Management Accounting and Cost Accounting and Limitations of Management Accounting.
- II. **Analysis of Financial Statements** (10 hours): Meaning and Definition of Financial Statements – Financial Analysis – Types of Financial Analysis, Techniques of Financial Analysis - Common Size Statements, Comparative Statements and Trend Analysis and Problems.
- III. **Ratio Analysis** (14 hours): Meaning and Objectives – Types of Ratios – Re-arrangement of Income Statements and Balance Sheet – (A) Profitability Ratios – GP Ratio, NP Ratio, Operating Ratio – Operating Profit Ratio - Return on Capital Employed Ratio – EPS; (B) Turnover Ratios – Debtors Turnover Ratio – Creditors Turnover Ratio; (C) Financial Ratios, Current Ratio - Liquidity Ratio, Debt-Equity Ratio, Capital Generating Ratio and Advantages and Limitations of Ratios.
- IV. **Fund Flow Analysis** (10 hours): Meaning, Concepts of Funds – Meaning and Definition of Fund Flow Statements – Uses and Limitations – Procedure for Preparation of Funds Flow Statement – Statement of Changes in Working Capital, Statement of Funds from Operations, and Statements of Sources and Application of Funds.
- V. **Cash Flow Statements** (10 hours): Meaning, Definition, Uses and Limitations- Differences between Fund Flow Statement and Cash Flow Statement – Preparation of Cash Flow Statements (Ind AS - 7): Direct Method and Indirect Method.

- VI. Budgetary Control** (10 hours): Meaning of Budget, Budgeting and Budgetary Control, Types of Budgets, Limitations of Budgetary Control, Problems on Sales Budget and Flexible Budget.

Skill Development Activities:

- (1) Preparation of common size financial statements, trend percentages and comparative financial statements of an organization at least for two years
- (2) Calculation of ratios based on the above financial statements – gross profit ratio, net profit ratio, operation profit ratio, current ratio and operations
- (3) Identify current assets, current liabilities, and non-current liabilities from the above financial statements
- (4) Preparation of fund flow statement and determination fund from operations with imaginary figures
- (5) Preparation of flexible budget with imaginary figures
- (6) Visit an organization, collect information regarding budgets prepared by them, and prepare budget based on the given information

Recommended Books for Reference:

- (1) Advanced Management Accounting: J. Madegowda, 2nded, Himalaya Publishing House
- (2) Management Accounting: J. Madegowda, Himalaya Publishing House
- (3) Management Accounting: Dr. S.P. Gupta
- (4) Management Accounting :M.Y. Khan And P.K. Jain
- (5) Management Accounting: Dr. S.N. Maheshwari
- (6) Management Accounting: B.S. Raman
- (7) Management Accounting; Howard And Brown
- (8) Management Accounting : S.M. Goyal And Dr. Manmohan
- (9) Management Accounting-Dr, B. Mariyappa

B.Com, Semester – VI

Course – 606: Principles and Practice of Auditing

Course Objective: To acquaint students with auditing principles and different dimensions of Auditing

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 3 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Auditing** (12 hours): Meaning, Definition, Objectives, Types of Audit, Advantages and Disadvantages of Audit, Preparation before Commencement of New Audit, Audit Note, Audit Working Paper, Audit Programme, Recent Trends in Auditing, Nature and Significance of Tax Audit, Cost Audit and Management Audit.
- II. **Internal Check** (10 hours): Meaning, Objectives, Fundamental Principles, Internal Check as Regards Wage Payment, Cash Book, Purchases, Cash Sales; Merits of Internal Check, Differences between Internal Check and Internal Audit.
- III. **Vouching** (14 hours): Definition, Importance, Objectives, Routine Checking and Vouching - Types of Vouchers, Vouching Receipts, Cash Sales, Receipts from Debtors, Proceeds of Sales, Sale of Investment, Vouching of Payments, Cash Purchase and Payment to Creditors.
- IV. **Verification and Valuation of Assets and Liabilities** (14 hours): Meaning and Objectives of Verification and Valuation - Position of an Auditor as regards the Valuation of Assets - Verification and Valuation of different Items - Land and

Building, Plant and Machinery, Goodwill – Investments - Stock in Trade, Bills Payable and Sundry Creditors.

- V. **Company Audit and Others** (10 hours): Company Auditor – Appointment – Qualifications - Powers – Duties and Liabilities; Types of Audit Report - Clean and Qualified Report, Audit of Educational Institutions, Audit of Insurance Company and Audit of Cooperative Societies.
- VI. **Audit Standards** (4 hours): Audit of Computerized Accounts - Audits in an EDP - General EDP Controls, EDP Application Controls and Computer Assist Auditing Techniques

Skill Development Activities:

- (1) Draft an audit programme
- (2) Draft an investigation report on behalf of a public limited company
- (3) Visit an audit firm, write about the procedure followed by them in auditing the books of account of a firm
- (4) Formulate internal check system for cash sales
- (5) Prepare qualified/clean audit report

Recommended Books for Reference:

- (1) Auditing - T.R Sharma
- (2) Principles of Auditing - Dr. Nanjgowda
- (3) Principles and Practice of Auditing - M.S Ramaswamy
- (4) Principles and Practice of Auditing –R.G Sexena
- (5) Auditing – B.S Raman
- (6) Practical auditing – B.N Tandon
- (7) Auditing – Kamal Gupta

B.Com, Semester - VI

Course – 608: Soft Skills

Course Objective: To acquaint students with the essential of communication

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 2 Maximum Marks: 50 Examination Duration: 1½ hours

Unit

Course Inputs

- I. **Elements of Communication** (4 hours): Meaning, Importance, Objectives and Principles of Communication, Types and Forms of Communication, Process, Impediments of Effective Communication, and Strategies for Effective Communication.
- II. **Non-verbal Communication**(8 hours): Body Language, Gestures, Postures, Facial Expressions, Dress Codes, Cross Cultural Dimensions of Business Communication, Listening and Speaking, Techniques of Eliciting Response, Probing Questions, Observation, Business and Social Etiquettes.
- III. **Public Speaking** (8 hours): Principles of Effective Speech and Presentations, Technical Speeches and Non-Technical Presentations, Speech of Introduction of a Speaker - Speech of Vote of Thanks - Occasional Speech - Theme Speech; Moderating Programs and Use of Technology
- IV. **Interview Techniques** (6 hours): Importance of Interviews, Art of Conducting and Giving Interviews, Placement Interviews - Discipline Interviews - Appraisal Interviews and Exit Interviews.
- V. **Meetings** (6 Hours): Importance, Meetings Opening and Closing Meetings Participating and Conducting Group Discussions, Brain Storming, and E- Meetings,

Career Counseling, and Resume Preparation.

Skill Development Activities:

- (1) Conduct a mock meeting and draft minutes of the meeting
- (2) Draft a letter of enquiry to purchase a laptop
- (3) Draft your bio-data

Recommended Books for Reference:

- (1) Soft Skills of Personality Development: C.G.G Krishnamacharyulu and Lalitha
- (2) Lesikar, R.V. and Flatley, M.E. Basic Business Communication Skills for Empowering the Internet Generation, TMH, New Delhi.
- (3) Rai and Rai: Business Communication Himalaya Publishing House
- (4) Ludlow, R. and Panton, F. (1998). The Essence of Effective Communications, Prentice Hall of India Pvt. Ltd
- (5) M.S. Rao : Soft Skills – Enhancing Employability I.K. International
- (6) Rao and Das: Communication Skills
- (7) Adair, J. (2003). Effective Communication. Pan McMillan.
- (8) Thill, J.V. and Bovee, G. L, Excellence in Business Communication, TMH, New York.
- (9) Bowman, J.P. and Branchaw, P.P, Business Communications: From Process to Product. Dryden Press, Chicago.
- (10) Sharma S.P and Others, Business Communication
- (11) Rajkumar, Basic of Business Communication
- (12) Banerjee: Soft Skills Business and Professional Communication, I.K. International

Specialization Stream – A: Finance Stream

B.Com, Semester – V

Course – 507A: Advanced Financial Management

Course Objective: To acquaint students with the ways of mobilizing and using of financial resources by industrial enterprises

Pedagogy: Combination of lectures, assignments and group discussions.

Weekly Teaching Hours:4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Investment Decisions and Risk Analysis** (14 hours): Risk Analysis – Types of Risks – Risk and Uncertainty – Techniques of Measuring Risks – Risk Adjusted Discount Rate Approach – Certainty Equivalent Approach – Sensitivity Analysis - Probability Approach - Standard Deviation and Co-efficient of Variation – Decision Tree Analysis and Problems,
- II. **Sources of Capital** (12 hours): Long Term Sources – Meaning – Equity Shares – Preference Shares – Debentures – Differences between Shares and Debentures – Retained Earnings – Long Term Loans and Loans From Financial Institutions.
- III. **Capital Structure Theories** (10 hours): Introduction – Capital Structure – Capital Structure Theories - Net Income Approach - Net Operating Income Approach - Traditional Approach – MM Approach and Problems.
- IV. **Dividend Theories** (12 hours): Introduction – Irrelevance Theory – MM Model; Relevance Theories - Walter Model - Gordon Model and Problems on Dividend Theories.
- V. **Planning and Forecasting of Working Capital** (14 hours): Concept of Working Capital – Determinants of Working Capital – Estimating Working Capital Needs – Operating Cycle – Cash Management – Motives of Holding Cash – Cash Management

Techniques – Preparation of Cash Budget, Receivables Management – Preparation of Ageing Schedule and Debtors Turnover Ratio; Inventory Management Techniques and Problems on EOQ.

Skill Development Activities:

- (1) Preparation of a small project report of a small business concern covering all components - Finance, Marketing, Production, Human Resources, General administration (any one component can be selected as the title of the report)
- (2) Designing a capital structure for a trading concern
- (3) Preparing a blue print on working capital of a small concern
- (4) Prepare a chart on modes of cash budget
- (5) List out different modes of Dividend Policy
- (6) List out the companies which have declared dividends recently along with the rate of dividend

Recommended Books for Reference:

- (1) Narendra Singh, Advanced Financial Management
- (2) K. Venkataramana, Advanced Financial Management, SHBP.
- (3) Ghousia Khatoon, Mahanada B. C., Advanced Financial Management, VBH
- (4) S N Maheshwari, Financial Management Principles and Practice, Sultan Chand
- (5) Khan and Jain, Financial Management, Tata McGraw Hill
- (6) Sudhindra Bhat, Financial Management, Prentice Hall of India
- (7) Sharma and Sashi Gupta, Financial Management, Kalyani Publication
- (8) I M Pandey, Financial Management, Vikas Publication
- (9) Prasanna Chandra, Financial Management, Tata McGraw Hill
- (10) R.M Srivastava, Financial Management & Policy, Sterling publishers

Specialization Stream – A: Finance Stream

B.Com, Semester - VI

Course – 607A: Security Analysis and Portfolio Management

Course Objective: To acquaint students with investment decisions and portfolio management

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Investment Management** (15 hours): Meaning of Investment – Selection of Investment – Classification of Securities – Risk and Uncertainty – Types of Risks – Risk and Expected Return – Measurement of Portfolio Risk – Benefits of Diversification – Investment Strategies – Types of Companies and Stocks – Matrix Approach in Investment Decision and Investment Avenues
- II. **Security Analysis** (15 hours): Introduction – Fundamental Analysis – Economic Analysis – Industry Analysis – Company Analysis; Technical Analysis – Dow Theory – Advanced Declined Theory and Chartism Assumptions of Technical Analysis.
- III. **Modern Portfolio Theory** (14 hours): Introduction – Mean – Variance Model – Capital Market Line – Market Portfolio – Capital Asset Pricing Model – Security Market Line – Beta Factor – Alpha and Beta Coefficient and Arbitrage Pricing Model.
- IV. **Portfolio Management** (10 hours): Markowitz Model – Sharpe Model – Jensen and Treynor Model.
- V. **Global Markets** (10 hours): Global Investment Benefits - Introduction to ADRs, GDRs, FCCBs, Foreign Bonds, Global Mutual Funds – Relationship between Trends

in Global Markets and Domestic Markets.

Skill Development Activities:

- (1) Prepare an imaginary investment portfolio for salaried man whose income is ₹ 10 lakhs per annum and estimate savings is ₹ 2 lakhs per annum
- (2) Make a list of 30 companies which have gone for IPO very recently
- (3) Prepare a statement showing the ups and downs in the BSE index for the last one year

Recommended Books for Reference:

- (1) Avadhani, Investment Analysis and Portfolio Management, HPH
- (2) Preeti Singh - Security Analysis and Portfolio Management, HPH
- (3) K. Venkataramana, Security Analysis and Portfolio Management, SBHP
- (4) Kevin, Investment and Portfolio Management
- (5) Prasanna Chandra, Investment Analysis and Portfolio Management, McGraw-Hill
- (6) Sudhindra Bhat, Security Analysis and Portfolio Management - Fischer and Jordan, Security Analysis and Portfolio Management, Prentice Hall
- (7) A.P. Dash, Security Analysis and Portfolio Management, I.K. Intl
- (8) Rohini Singh, Security Analysis and Portfolio Management
- (9) Punithvathy Pandian, Security analysis & portfolio Management

Specialization Stream – B: Marketing Stream

B.Com, Semester – V

Course – 507B: Product and Sales Management

Course Objective: To acquaint students with adequate knowledge of product and sales management

Pedagogy: Combination of lectures, assignments and group discussions.

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Product Management** (12 hours): Meaning, Definition of Product, Market - Market focused Organization; Functionally focused Organization; Product Management – Facts Vs Fiction; Changes affecting Product Management; and Product Strategy.
- II. **Product Planning and Management** (12 hours): Meaning, Definition and Objectives of Product Planning; Frequent mistakes in Planning; Planning Process; Components of a good Plan; Product Life Cycle; Market Growth; Product Attractiveness - Factors influencing a Product; Threat of New Entrants, Product Differentiation; Bargaining Power of Buyers and Suppliers; Pressure from Substitutes; Environment Analysis; and Product Line Management.
- III. **New Product Development** (12 hours): Meaning, Definition and Organization for New Product Development; Idea Generation and Screening; Concept of Development and Evaluation; New Product Development and Evaluation; Product Modification; Product Variants; Brand Extension; Test Marketing, Evaluation for Market Acceptance; Commercialization and Product Failure.
- IV. **Salesman** (14 hours): Meaning, Definition and Qualities of a good Salesman, Recruitment of Salesmen in the Organization, Product, Knowledge, Planned Selling, Approach - Pre-Approach-Meeting, Objectives, Closing the Sale-Scales Call; Customer Psychology - Buying Motives of our Customer, Effective Speaking, Consumer Products Vs Industrial Products Selling - Trade Relations – Sales Personnel Recruitment, Selection, Training, and Remuneration.

- V. **Sales and Marketing System** (14 hours): Meaning, Definition, Objectives of Sales, Promotion Schemes and Situations in which they Launched. 42 Direct Premiums (Branded Packs, Price Rebates, Quantity Deals, Sampling, *etc*), Criteria for Judging the Success or Failure of Sales Promotion Schemes, What Sales Promotion can achieve and its Limitations; Consumer Contests, Interim Action Premiums (Coupon, Offers, *etc*), Self-Liquidating Premium; Survey of Gift Scheme Window Display, Types of Dealer Promotion Schemes, Wholesale and Retail Trade (Discount and Bonus Incentives for the Trade Sales Promotion and Industrial Products - Merchandising and Display - Sales Aids and Dealers Aids. Marketing System - Marketing Channels Behavioral Process in Marketing Channels, Designing Channels, Channels of Distribution and Promotion, Physical Distribution; and Factors affecting Channel Choice.

Skill Development Activities:

- (1) Select any product and examine the features of channels selected for distribution
- (2) Visit any organization and understand about remuneration and incentives to salesman
- (3) Chart out product planning process
- (4) Chart Sales Promotion schemes of two consumer durable products and two non-consumer durable products
- (5) Identify a product and position it in the market – chart it out

Recommended Books for Reference:

- (1) Lehmann R. Donald & Winer. S. Russell; Product Management; Tata McGraw-Hill Edition; 3rd Edition
- (2) Still R. Richard, Cundiff W. Edward and Govoni A P Norman, Sales Management Decisions, Strategies and Cases; Prentice Hall of India (P) Ltd; New Delhi
- (3) Ramanujam and Majumdar, Product management
- (4) Chunawalla S.A, Product management.
- (5) Aswathappa, Product management
- (6) Verma and Agarwal, Sales management

Specialization Stream – B: Marketing Stream

B.Com, Semester – VI

Course – 607B: Retail Management

Course Objective: To acquaint students about the consumer behavior in retail management

Pedagogy: Combination of lectures, assignments and group discussions.

Weekly Teaching Hours: 4

Maximum Marks: 100

Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Retail Business** (12 hours): Definition – Functions of Retailing - Types of Retailing – Forms of Retail Business Ownership; Retail Theories – Wheel of Retailing – Retail Life Cycle; Retail Business in India: Influencing Factors – Present Indian Retail Scenario and International Perspective in Retail Business.
- II. **Consumer Behavior in Retail Business** (14 hours): Buying Decision Process and its Implications on Retailing – Influence of Group and Individual Factors, Customer Shopping Behaviour, Customer Service and Customer Satisfaction; Retail Planning Process: Factors to consider in preparing a Business Plan – Implementation and Risk Analysis.
- III. **Retail Operations** (12 hours): Factors influencing Location of Store - Market Area Analysis – Trade Area Analysis – Rating Plan Method - Site Evaluation; Retail Operations: Stores Layout and Visual Merchandising, Stores Designing, Space

Planning, Inventory Management, Merchandise Management, and Category Management.

- IV. **Retail Marketing Mix** (16 hours): Introduction; Product: Decisions related to selection of Goods (Merchandise Management Revisited) – Decisions related to Delivery of Service; Pricing: Influencing Factors – Approaches to Pricing – Price Sensitivity - Value Pricing – Markdown Pricing; Place: Supply Channel – SCM Principles – Retail Logistics – Computerized Replenishment System – Corporate Replenishment Policies; Promotion: Setting Objectives – Communication Effects - Promotional Mix; Human Resource Management in Retailing – Manpower Planning – Recruitment and Training – Compensation and Performance Appraisal Methods.
- V. **Impact of Information Technology in Retailing** (10 hours): Non Store Retailing (E-Retailing) - Impact of Information Technology in Retailing - Integrated Systems and Networking – EDI – Bar Coding – Electronic Article Surveillance – Electronic Shelf Labels – Customer Database Management System; Legal aspects in Retailing, Social Issues in Retailing, and Ethical Issues in Retailing.

Skill Development Activities:

- (1) Draw a retail life cycle chart and list the stages
- (2) Draw a chart showing a store operations
- (3) List out the major functions of a store manager diagrammatically
- (4) List out the current trends in e-retailing
- (5) List out the factors influencing in the location of a New Retail outlet

Recommended Books for Reference:

- (1) Suja Nair; Retail Management, HPH
- (2) Karthic – Retail Management, HPH
- (3) S.K. Poddar & others – Retail Management, VBH
- (4) R.S Tiwari ; Retail Management, HPH
- (5) Barry Bermans and Joel Evans: "Retail Management – A Strategic Approach", 8th edition, PHI
- (6) A.J. Lamba, The Art of Retailing, 1st edition, Tata McGraw-Hill, New Delhi
- (7) Swapna Pradhan, Retailing Management, TMH
- (8) K. Venkataramana, Retail Management, SHBP
- (9) James R. Ogden and Denise T., Integrated Retail Management
- (10) A Sivakumar Retail Marketing , Excel Books

Specialization Stream – C: Banking and Insurance Stream

B.Com, Semester – V

Course – 507C: Advanced Bank Management

Course Objective: To acquaint students about the advanced aspects of banking system

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Branch Operation and Core Banking** (14 hours): Introduction and Evolution of Bank Management – Technological Impact on Banking Operation – Total Branch Computerization – Concept of Opportunities – Centralized Banking – Concept, Opportunities, Challenges and Implementation.
- II. **Delivery Channels** (14 hours): Delivery Channels – Automated Teller Machine (ATM) – Phone Banking – Call Centers – Internet Banking – Mobile Banking – Payment Gateways – Card Technologies and MICR Electronic Clearing.

- III. **Back Office Operations** (12 hours): Bank Back Office Management – Inter Branch Reconciliation – Treasury Management – Forex Operations – Risk Management – Data Center Management – Network Management – Knowledge Management (MIS/DSS/EIS) and Customer Relationship Management (CRM).
- IV. **Inter Bank Payment System** (12 hours): Interface with Payment System Network – Structured Financial Messaging System – Electronic Fund Transfer – RTGS – Negotiated Dealing Systems and Securities Settlement Systems – Electronic Money and E- Cheques.
- V. **Contemporary Issues in Banking Techniques** (12 hours): Analysis of Rangarajan Committee Reports – E Banking Budgeting and Banking Software.

Skill Development Activities:

- (1) Filling of application for opening a Bank Account
- (2) Preparations of Bank Reconciliation Statement
- (3) Identify and compare the banking delivery channels of nationalized banks and private banks
- (4) List out the boons and the banes of computerization of banks operations
- (5) Current issues in banking technology to be discussed in class

Recommended Books for Reference:

- (1) Kaptan S S and Choubey N S, E-Indian Banking in Electronic Era, Sarup & Sons, New Delhi
- (2) Vasudeva, E-Banking, Common Wealth Publishers, New Delhi
- (3) Chandramohan: Fundamental of Computer Network I.K. International Publishers
- (4) Effraim Turban, Rainer R. Kelly, Richard E. Potter, Information Technology, John Wiley & Sons Inc
- (5) Andrew S. Tanenbaum, Computer Networks, Tata McGraw Hill,
- (6) Padwal & Godse : Transformation of Indian Banks with Information Technology

Specialization Stream – C: Banking and Insurance Stream

B.Com, Semester – VI

Course – 607C: Life and General Insurance

Course Objective: To acquaint students about the principles of managing and administration of insurance business

Pedagogy: Combination of lectures, assignments and group discussions.

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Life Insurance** (14 hours): Introduction to Life Insurance - Principles of Life Insurance - Life Insurance Products, Pensions and Annuities - Life Insurance Underwriting - Need for Selection - Factors affecting Rate of Mortality - Sources of Data - Concept of Extra Mortality - Numerical Methods of Undertaking and Occupational Hazards.
- II. **Legal Aspects of Life Insurance** (14 hours): Legal Aspects of Insurance - Indian Contract Act, Special Features of Insurance Contract; Insurance Laws, Insurance Act, LIC Act, and IRDA Act.
- III. **Claim Management and Re-Insurance** (12 hours): Claim Management - Claim Settlement - Legal Framework - Third Party Administration, Insurance Ombudsman - Consumer Protection Act - Re-Insurance in Life Insurance - Retention Limits - Methods of Re-Insurance.
- IV. **Introduction to General Insurance** (12 hours): Introduction to General Insurance;

Principles of General Insurance, Types of General Insurance - Personal General Insurance Products (Fire, Personal Liability, Motors, Miscellaneous Insurance); Terminology, Clauses and Covers, Risk Assessment, Underwriting and Ratemaking, Product Design, Development and Evaluation and Loss of Provincial Control.

- V. **Insurance Industry** (12 hours): Insurance Industry - Brief History - Pre Nationalization and Post Nationalization - Current Scenario, and Re-Insurance – Functions.

Skill Development Activities:

- (1) Calculation of policy premium with imaginary figures
- (2) Calculation of fair claims with imaginary figures
- (3) Preparation of list occupational hazards under life insurance
- (4) List out top 10 private life insurance companies
- (5) Write a note on the current developments under IRDA Act

Recommended Books for Reference:

- (1) Annie Stephen L, HPH
- (2) P. Perya Swamy, Principles and Practice of Life Insurance
- (3) Raman B, Your Life Insurance, Hand Book
- (4) William C. Arthur, Risk Management and Insurance
- (5) G. Krishna Swamy, A Text book on Principles and Practices of Life Insurance
- (6) Gopal Krishnan, Liability Insurance
- (7) Aramvalarthan, Risk Management I.K. Intl
- (8) Mishra M.N, Insurance Principles and Practice
- (9) Bose A.K, Engineering Insurance
- (10) Fire Insurance Claim, Insurance institute of India
- (11) P. K Gupta, Insurance and Risk Management

Specialization Stream – D: E-commerce Stream

B.Com, Semester – V

Course – 507D: E-Commerce – I

Course Objective: To acquaint students about programming language ‘C’

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **E-Commerce** (8 hours): E-Commerce Vs E-Business, Advantages of E-Commerce, Internet Banking - Advantages of Online Banking, Facilities, Internet Banking in India, ATM, Credit Card/Debit Card, Smart Card; Advantages of Internet Marketing, and Advertising over Internet.
- II. **Introduction to HTML** (10 hours): HTML Documentation, Structure and Tags, Defining Web Page Appearance, Text Formatting, Writing simple HTML Documents, Front Page, Advantages and Options.
- III. **Introduction To ‘C’** (3 hours): History of ‘C’, Features and Merits of ‘C’, Basic Structure of a ‘C’ Program, Character Set, Key Words, Identifiers, Data Types, Constants and Variables, Data Type Declaration Statement, Assigning Values to a Variable, Operators, Expressions, Loading, Editing, Saving and Executing C Programs, and Turbo ‘C’ Hot Keys
- IV. **Input/Output Statements** (15 hours): Input/Output Statements - Unformatted (Getchar; Putchar; Gets; Puts; Getch; Gerche) and Formatted I/O Functions (Scanf; Printf); Program Flow Control Statements, Branching Statements, Looping Statements,

Jumping Statements, If Statement, If-else Statement, Switch Statement, While Statement, Do-While Statement, For Statement, and Nested for Loop Statement.

- V. **Arrays** (8 hours): One Dimensional Array, Two Dimensional Array, and Library Functions (Abs, Sqrt, Pow).
- VI. **Writing Simple Programmes Using 'C'** (20 hours): Language involving Arithmetical Operations on Numbers, Number Generations of Various Types - Natural Numbers, Even and Odd Numbers, Multiplication Table, Fibonacci Series, Factorial of A Number, Array Addition, Inverse of Matrix, Use of Formulas - Simple Interest, Compound Interest, Area Calculations, etc.

Skill Development Activities:

- (1) Write a C Program to find the area and circumference of the circle
- (2) Write a C Program to show the use of Char and String used
- (3) Write a C Program to the use of Do and While statement
- (4) Write a C Program to show the use of mul and pow functions
- (5) Write a Program to display the growth of a fixed deposit in a bank
- (5) Write a C Program for finding Biggest and Smallest among many numbers using array
- (5) Write a C Program to show the use of Switch Case
- (5) Write a C Program for calculation of salesman's commission
- (5) Write a C Program for preparation of marks statement
- (5) Write a C Program to show arithmetical operations on numbers
- (5) Write a C Program to calculate simple interest and compound interest
- (5) Write a C program to find whether the number is a perfect square or not
- (5) Write a HTML document for display of an Advertisement message with suitable tags
- (5) Write a HTML document to show a moving message on the screen

Recommended Books for Reference:

- (1) Rajaraman, Computer Programming in 'C' (Prentice Hall of India).
- (2) Yashwanth, P. Kanetkar, Let Us C (BPB Publications).
- (3) Byron S Gottrifried, Programming with C (Tata McGraw Hill Publishing Co. Ltd)

Specialization Stream – D: E-commerce Stream

B.Com, Semester – VI

Course – 607D: E-Commerce – II

Course Objective: To acquaint students with knowledge about internet and visual basics

Pedagogy: Combination of lectures, assignments and group discussions.

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Introduction to Internet** (6 hours): Meanings of Internet and Intranet, Modem, LAN, WAN, MAN, WWW; Advantages and Disadvantages of Internet.
- II. **Email** (6 hours): Meaning, Advantages, Steps in Creating E-Mail ID, Internet Browsing, Information through Web-Sites, Search Engines, and Browser (Internet Explorer).
- III. **Power Point** (16 hours): Start, End, Open, Format, Edit, Print and Save a Presentation; Insert, Format and Modify Text, Select a Design Template, Create a Title Slide, Create a Multi-Level Bulleted List Slide, Display and Print in Black and White, Describe Speech Recognition Capabilities of Power Point, Add Slides to and Delete Slides from a Presentation; Create a Presentation from an Outline and Use Outline Features, Change the Slide Layout, Insert and Edit Clip Art, Add a Header and Footer, Add

Animation and Slide Transition Effect, Create Presentation using Embedded Visuals, Create a Slide Background using a Picture, Customize Graphical Bullets, Create and Embed an Organizational Chart, Insert and Format a Table into a Slide, Add an Animation Scheme to selected Slides, Print Handouts, and Rearrange Slides.

- IV. **Introduction to Visual Basic Programming** (12 hours): Introduction to Visual Basic, Terminologies, Creating an Application, Modular Environment; Building an Application, Setting Properties of Objects, Forms; Introduction to Controls; Event-Driven Programming.
- V. **B Coding: Examining Code** (12 hours): Using Object Browser, Statements and Functions, Conditional Statements and Looping Statements in Visual Basic; Native Code Compiler; Debugging, Overview of Debugging, Forms, Using Forms, Multiple Forms, Events; Start Up and End of Application Variables, Data Types, Scope and Life Time of Variables, Constants, Arrays and User-Defined Types.
- VI. **Procedure** (12 hours): Introduction to Procedure, Arguments and Parameters; Named Arguments and Optional Arguments; Controls – Using Controls, and Standard Controls (Custom Controls).

Skill Development Activities:

- (1) Write the steps for addition of any two numbers in Visual Basic
- (2) Write the steps for Swapping two numbers in Visual Basic
- (3) Write the steps for finding Simple Interest/Compound Interest in Visual Basic
- (4) Write the steps for creating Presentation having atleast five slides related to a new product launching
- (5) Write the steps for creating Presentation having atleast four or five slides related to motivating the salesmen

Recommended Books for Reference:

- (1) U. S. Pandey, Rahul Srivastava and Others, E-Commerce and Its Applications (S. Chand & Co)
- (2) Kamlesh N. Agarwal and Deeksha Agarwal, Business on the Net (McMillan India Ltd)
- (3) Jerke, Visual Basic
- (4) White, Visual Basic Programming

Specialization Stream – E: Quantitative Techniques Stream

B.Com, Semester – V

Course – 507E: Quantitative Techniques – I

Course Objective: To acquaint students about the application of mathematical and statistical techniques to practical business problems

Pedagogy: Combination of lectures, assignments and group discussions.

Weekly Teaching Hours: 4

Maximum Marks: 100

Examination Duration: 3 hours

Unit

Course Inputs

- I. **Arithmetic and Geometric Progression** (8 hours): Arithmetic Progression, Geometric Progression, Some of n^{th} Term of Arithmetic Progression and Geometric Progression, Arithmetic Mean and Geometric Mean.
- II. **Matrices and Determinants** (13 hours): Matrices, Types of Matrices; Operation of Addition, Subtraction and Multiplication of Matrix with Special Application to Business; Transpose of Matrix, Determinants of Square Matrix, Cramer's Rule with Two and Three Unknown Properties, Adjoint of a Square Matrix, and Inverse of a Square Matrix (excluding Matrix Method).
- III. **Differential Calculus** (13 hours): Variables and Constant, Function, Real/Valued

Function, Limits of Function, Methods of Evaluating Limits, Differentiation of Linear Function, Finding Maxima and Minima of a Function, Application of Differential to Commerce, (excluding Derivations).

- IV. **Linear Programming** (14 hours): Linear Inequalities, Linear Programming, Formation of Linear Programming Problems, Mode/Solutions to Linear Programming Problems by Graphic and Simplex Method (problems to be restricted to two variables).
- V. **Theory of Probability** (10 hours): Introduction, Random Experiments, Sample Space and Probability, Theory of Expectations, Random Variables, Problems related to Probability based on Combination, Law of Probability, Events, and Compound Events.
- VI **Theoretical Distribution** (6 hours): Introduction, Binomial Distribution, Poisson Distribution, Normal Distribution, and Problems

Skill Development Activities:

- (1) Apply Arithmetic Progression and Geometric Progression methods to find the growth rate of food grains and population
- (2) Use Matrix Principles to implement food requirement and protein for two families. Show the way in which price and demand situations will help to purchase goods and services by the use of matrices
- (3) Select different ways to go to Bengaluru from your native place through permutation techniques
- (4) Use different techniques to show price, supply and demand position for a particular product, and also show maximum and minima
- (5) Visit a nearest Industry or Computer Centre and draw Linear Programming Problem model regarding different problems. Find a solution to the problem

Recommended Books for Reference:

- (1) Business Mathematics, Sanchethi Kapoor
- (2) Business Mathematics, S. P. Gupta
- (3) Mathematics for Cost Accountants, R. Gupta
- (4) Business Mathematics: Madappa and Sridhara Rao
- (5) Business Mathematics: Dorairaj, S. N
- (6) Business Mathematics: B. H. Suresh
- (7) Business Mathematics: Sanchethi Aggarwal
- (8) Business Mathematics: Aggarwal
- (9) Business Mathematics: Oak and other (Himalaya Publishing House)

Specialization Stream – E: Quantitative Techniques Stream

B.Com, Semester – VI

Course – 607E: Quantitative Techniques – II

Course Objective: To acquaint students with the application of mathematical techniques to business situations

Pedagogy: Combination of lectures, assignments and group discussions

Weekly Teaching Hours: 4 Maximum Marks: 100 Examination Duration: 3 hours

Unit

Course Inputs

- I. **Games and Strategies** (10 hours): Introduction to Games, Two-Person Zero-Sum Games, Some Basic Terms, the Maxi-min– Mini-max Principle, Games without Saddle Points - Mixed.
- II. **Assignment Problems** (10 hours): Introduction, Mathematical Function of the Problems, Assignment Cases in Assignment Problems, Typical Assignment Problem, and Travelling Salesman Problem.

- III. **Transportation Problems** (12 hours): Introduction, General Transportation Problem, Transportation Table, Duality in Transportation Problem, Loops in Transportation Problem, LP Formulation of the Transportation Problem, Solution of a Transportation Problem, Finding an Initial Basic Feasible Solution, and Test for Optimality
- IV. **Decision Analysis** (10 hours): Introduction, Decision Making Problem, Decision Making Process, Decision Making Environment, Decision under Uncertainty, Decisions under Risk, and Decision Tree Analysis.
- V. **Simulation** (12 hours): Introduction, Why Simulation, Methodology of Simulation, Simulation Models, Event-Type Simulation; Generation of Random Numbers; Monte-Carlo Simulation, Simulation of Inventory Problems, Simulation of Queuing System, Simulation of Maintenance Problems, Simulation of Investment and Budgeting, Simulation of Job Sequencing, Advantages and Limitations of Simulation.
- VI. **Project Management** (10 hours): Introduction, Basic Concepts of Network Analysis, Time Estimates in Vertical Path Analysis, PERT and CPM, Simple Problems on PERT and CPM.

Skill Development Activities:

- (1) Play game for competing with the rival trader, find Games Strategies to withstand in the game
- (2) Give an assignment to a particular person who is capable to find suitable measures to particular assigned task
- (3) Find the least route to go to the places when a travelling agent is supposed to visit more than two places simultaneously
- (4) Find strategies for assigning a particular task to various persons
- (5) How simulation can be derived and give suitable examples
- (6) Experiment different events for finding solution for probable events

Recommended Books for Reference:

- (1) Business Mathematics, Sanchethi Kapoor
- (2) Business Mathematics, S. P. Gupta
- (3) Mathematics for Cost Accountants, R. Gupta
- (4) Business Mathematics: Madappa Sridhara Rao
- (5) Business Mathematics: Dorairaj, S. N
- (6) Business Mathematics: B. H. Suresh
- (7) Business Mathematics: Sanchethi Aggarwal
- (8) Business Mathematics: Aggarwal
- (9) Business Mathematics: Oak and other (Himalaya Publishing House)
- (10) Kanti Swarup, P. K Gupta Man Mohan, Operations Research
- (11) V. K. Kapoor, Quantitative Techniques

Question Paper Pattern for Semester-end Examinations

[Each Question Paper shall be divided into three Sections *viz.*, Section – A (Conceptual),
Section – B (Analytical) and Section – C (Application)]

Section – A:

Maximum Marks: 15,

Three Questions shall be answered out five Questions (including three Problems in the case of Quantitative Courses),

Each question carries five marks, and

Answer to each theory question shall be in not more than two pages.

Section – B:

Maximum Marks: 20,

Two Questions shall be answered out four Questions (including three Problems in the case of Quantitative Courses),

Each Question carries ten marks, and

Answer to each theory Question shall be in not more than five pages.

Section – C:

Maximum Marks: 45,

Three Questions shall be answered out five Questions (including four Problems in the case of Quantitative Courses),

Each Question carries 15 marks, and

Answer to each theory Question shall be in not more than eight pages.

Note: Calculators, Mathematical Tables and Present Value Tables are allowed.

**Question Paper Pattern for Course – 508: Logical and Analytical Reasoning
(B.Com, Semester – V)**

Duration: 90 minutes,

Maximum Marks: 40,

40 multiple answer questions and all are compulsory, and

Each question carries 1 mark.

**Question Paper Pattern for Course – 608: Soft Skills
(B.Com, Semester – VI)**

Duration: 90 minutes,

Maximum Marks: 40,

Students shall answer 8 questions out of 10 questions, and

Each question carries 5 marks.

**Question Paper Pattern
for**

Course – 307: Environmental Science (B.Com, Semester - III) and

Course – 407: Indian Constitution (B.Com, Semester - IV)

Duration: 3 hours,

Maximum Marks: 80,

80 multiple answer questions and all are compulsory, and
Each question carries 1 mark.



Revised syllabus

BCA, B. Sc (Computer Science) and BA (Computer Applications)

W.E.F 2019-20

**DEPARTMENT OF P.G. STUDIES AND RESEARCH IN
COMPUTER SCIENCE,**

JANNASHAYADRI , SHAKARGHATTA

SHIMOGA, KARNATAKA

NEW SYLLABUS FOR B.Sc. (Computer Science)**(EFFECT FROM 2019-20)**

Paper code	Semester	SUBJECT	Weekly hours	Internal marks	External marks	Practicals	Total
BSC1	I	CF &CP	4+3	10	50	40	100
BSC1	I	CF &CP	4+3	10	50	40	100
BSC2	II	DS	4+3	10	50	40	100
BSC3	III	DBMS	4+3	10	50	40	100
BSC4	IV	C++	4+3	10	50	40	100
BSC5	V	JAVA	4+3	10	50	40	100
		UNIX Programming	4+3	10	50	40	100
BSC6	VI	Advanced JAVA	4+3	10	50	40	100
		SE&CN	4+3	10	50	40	100

FIRST SEMESTER B.Sc (Computer science)

Computer Science -I

BSC-1 Computers Fundamentals and C Programming

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to Computer Systems:

10 hrs

Definition of a Computer, History of Computers, Generations of Computers, types of computer – based on size and working principle, Block diagram of a Computer with functional units(explanation), Parts of a computer system, Information processing Cycle. Definition of software and hardware, types of programming languages, assembler, compiler, interpreter, linker, loader (Definitions only), number system – decimal, binary, octal and hexadecimal number, inter-conversion of decimal to binary and vice-versa. ASCII codes. Algorithm-definition, Characteristics, notations. Flowchart-definition, Symbols used in writing the flow-chart Writing an algorithm and flow-chart of simple problems.

Unit 2- Introduction to Computer Systems:

10 hrs

Introduction to C, features of C, basic C program structure, character set, tokens, keywords and identifiers. Constants, variables, data types, variable declaration, symbolic constant definition.

Unit 3- Operators and Expressions:

08 hrs

C operators- arithmetic, relational, logical, bitwise, assignment, increment and decrement, conditional (?:) and special operators, Arithmetic expressions, precedence of operators and associativity. Type conversions, mathematical functions. Definition of macro and pre-processor directives, Managing I/O operation – reading and writing a character, formatted and unformatted/O functions.

Unit 4- Control Structures:

10 hrs

Conditional control statements- if, if-else, nested-if, switch, goto statement, while, do-while and for statements. Unconditional control statements- break, continue and return statements (definition and explanation with syntax, flowchart and examples)

Unit 5- Arrays, Strings and Functions:

10 hrs

Definitions of an array, types-one and two dimensional array, (definition, declaration, initialization with examples). Strings–definition, declaration and initialization of string variable, string handling functions- strcmp, strcpy, strlen, strlwr,strupr (explanation with syntax and examples) Functions – definition, need, syntax for function declaration, function prototype, category of functions, nesting of functions, function with arrays, scope of variables, parameter passing mechanism-call by value and call by reference. Recursion and Recursive function (definitions only)

Reference :

1. Fundamentals of Computers, V. Rajaraman.
2. Computer Concepts and C Programming, P.B. Kotur
3. Let us C ,YashwanthKanetkar
4. ANSI C, Balagurusamy

QUESTION PAPER PATTERN FOR I SEMESTER B.Sc(Computer science)**PART -I:** 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: C- PROGRAMMING LAB

1. Find the biggest of three numbers.
2. Arithmetic operations using switch statement.
3. Find the Fibonacci series between M and N.
4. Prime numbers between M and N
5. Binary to Decimal conversion
6. Sorting an unsorted array
7. Searching an element in an array.
8. Addition of two matrices
9. Multiplication of two matrices
10. Norm and trace of the matrix.
11. Count the numbers of vowels in a given string.
12. Find the factorial of a number using function.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

SECOND SEMESTER B.Sc (Computer science)

Computer Science -II

BSC-2 DATA STRUCTURES USING C

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to Data Structure:

10 hrs

Definition of Structure, syntax and example for structure declaration. Definition of union, syntax and example for union declaration, difference between structure and union. Pointers–Definition, Declaration, Examples. Dynamic memory allocation functions – syntax and examples. Definition of Data Structure and types of data structures with examples.

Unit 2 – Stack and recursion:

10 hrs

Definition and example of stack (LIFO), operations of stack with algorithms, applications of stack, algorithm for the conversion of infix to postfix expression. evaluation of postfix expression, Tower of Hanoi problem and factorial of a number using recursion.

Unit 3- Queue:

10 hrs

Definition and example of Queue (FIFO), operations on queue, types of queue – ordinary queue and circular queue (definitions only), disadvantages of ordinary queue. Linked list–Definitions and types of lists (definitions only), operations of Single Linked List, implementation of stack using linked list, implementation of queue using linked list,

Unit 4- Tree :

10 hrs

Definition of a Tree, Definition of root, left sub tree, right sub tree, degree of node, terminal node, depth, Definition of Binary tree, types of binary trees (definition only), Algorithm for tree traversal.

Unit 5- Sorting and searching:

08 hrs

Definition of sorting, explanation of bubble sort, shell sort, radix sort and merge sort with examples. Definition of searching, explanation of Binary search and linear search with examples and algorithms.

References:

1. Systematic approach to data structure - Padmareddy
2. Programming in ANSI C - E Balaguruswamy
3. Datastructures and applications - Trembly and Sorenson

QUESTION PAPER PATTERN FOR II SEMESTER B.Sc(Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: DATA STRUCTURES LAB

1. Implementation of stack
2. Evaluation of postfix expression
3. Conversion of infix to postfix
4. Tower of Hanoi
5. Implementation of queue
6. Implementation of stack using linked list
7. Implementation of queue using linked list
8. Quick sort
9. Shell sort
10. Binary search

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

THIRD SEMESTER BSc (Computer science)

Computer Science -III

BSC-3OBJECT ORIENTED PROGRAMMING WITH C++

Theory Examination- 50 Max marks. Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to OOPS: 10 hrs

Object Oriented Programming paradigm, Basic concepts of Object Oriented Programming-Classes, Objects, Data Abstraction and Encapsulation, Polymorphism, Inheritance, Dynamic Binding, Message passing, Benefits of OOP, applications of OOP.

Unit 2-Introduction to C++: 10 hrs

Difference between C and C++, Structure of a C++ program, input and output statements, tokens - Keywords, identifiers, constants, strings and operators, reference variables – definition and example, special operators in C++, brief introduction to control structures in C++.

Unit 3-Classes Objects and Member Functions: 10 hrs

Difference between structure and class, syntax and example for class declaration, Definition of data member and member function, Defining member function inside and outside the class, inline functions, array of objects, default arguments, static data members and static member functions, function overloading, definition of friend function, syntax and example for the declaration of friend function, special characteristics of friend function.

Unit 4- Constructors, destructorsand Operator overloading: 09 hrs

Definition of a constructor, types - parameterized constructor, default constructor, copy constructor, special characteristics of constructor, definition of a destructor, special characteristics of destructor, definition to Operator overloading, overloading binary operator (+) to add two complex numbers, rules for operator overloading.

Unit 5: Inheritance and templates: 09 hrs

Definition of Inheritance,forms of inheritance, syntax and example for defining derived classes, visibility modes, explanation of multilevel inheritance and hybrid inheritance with examples. Definition of templates, syntax and example for class and function template.

Reference Books:

1. Object Oriented Programming with C++ - E Balaguruswamy
2. C++ - The Complete Language – BjarneSchildt
3. Object Oriented Programming in Turbo C++ - Robert Lafore

QUESTION PAPER PATTERN FOR III SEMESTER B.Sc (Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: C++ LAB

1. Write a c++ program to find the result of a student using class concept
2. Define a class to represent product details it includes data member pname, pcode, price, pquality include member function a) to get product detail b) to display the product details and total price using class concept
3. Write a c++ program to print Fibonacci series using constructor
4. Write a c++ program to find biggest of two numbers and three numbers using function overloading
5. write a c++ program to calculate area of triangle, rectangle and circle using function overloading
6. write a c++ program to calculate family income using friend function
7. write a c++ program to add two complex numbers using operator overloading
8. write a c++ program to implement multiple inheritance by creating classes: father , mother and son
9. write a c++ program to swap two numbers using function template
10. write a c++ program to sort an array using function template

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

FOURTH SEMESTER B.Sc (Computer science)
Computer Science -IV

BSC-4 DATABASE MANAGEMENT SYSTEM

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to DBMS:

10 hrs

Meaning of data and information, definitions of database, applications of database system, definition of DBMS, disadvantages of file processing system (advantages of DBMS), three levels of data abstraction, difference between schema and instance, definition of data models, types of data models (brief explanation), database languages – DDL and DML.

Unit 2- E-R model:

10 hrs

Different types of database users, functions of Database Administrator (DBA), basic-concepts - Primary keys, foreign key, super key, definition of E-R diagram, symbols used in E-R Diagram, E-R diagram for Banking enterprise, E-R diagram for Book store, types of entities, entity sets, attributes, types of attributes, weak entity sets, cardinality ratios (mapping cardinality).

Unit 3- Relational Model:

10 hrs

Fundamental operations of Relational algebra - select, project, union, set difference, join, division operations (explanation with examples). Types of aggregate functions – MAX, MIN, SUM, COUNT and AVERAGE (Definition with example).

Unit 4- SQL:

09 hrs

Definition of Query, explanation of basic structure of SQL – Select, from and where clauses in SQL, data types in SQL, explanation of set operation in SQL – Union, intersection, except, NULL values.

Unit 5: Relational database design:

09 hrs

Pitfalls in relational database design, definition of Normalization, Various types of Normal forms (Definitions only) – First Normal form, Second Normal form, Third Normal form, Boyce-Codd Normal Form (BCNF).

Reference Books:

1. Korth, Sudarshan “Database System concepts”, Mcgraw Hill-IV Edition.
2. Navathe, Silberchatz and Elmasri “fundamentals of database Systems”-Addison Wesley
- 3.C.J. Date “Introduction to Database systems” Addison-wesley.
4. Bipin C Desai “Introduction to Data base system” Galgotia publications

QUESTION PAPER PATTERN FOR IV SEMESTER B.Sc (Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: SQL LAB

I. Use default emp and dept tables to write SQL statements for following queries

1. Find the employee details in ascending order of their name and descending order of their salary
2. Find names of all employees whose name starts with 's' and having atleast 6 characters in it
3. Find the name of all managers and number of employees under them
4. Find the details of all employees in the research department
5. Find the minimum, maximum and average salary of each department
6. Find department name having least number of employees
7. Find the department name having highest annual payroll
8. Add an employee under the manager smith
9. Find the employees who are not getting commission

II. Create tables as below

Student(name string, regno string primary key, dob date, doj date ,course string foreign key)

Markscard(regno foreign key, sem string, sub1 number, sub2 number, sub3 number, tot number, avge number, result string)

Write SQL statements for the following queries.

1. List the names of students studying in BCA course in the order of their joining
2. Find the name of student who has scored highest marks in every sem of each course
3. Count the number of students in each course
4. Find the course having second highest number of students
5. Find the course having least students in I semester
6. Raise marks of sub3 in III sem BCA students by 5% if the student has failed in that subject
7. Display the details of student 'xxx' in every semester.
8. Find the names of all juniors of 'yyy' in course 'c1'
9. Find all students studying with 'xxx' and elder to him (compare DOB)

III. Dept(deptno integer pkey, dname string not null, loc string not null)
 Emp(eno integer pkey, ename string, deptnofkey, design string not null, bsal number>0)
 Salary(enofkey,da,hra,gross,it,pf,net,comm)
 Designations are: manager,clerk,salesman
 Comm=5% of basic if design=salesman otherwise null
 Da=15% bsalhra = 7% of bsal gross=bsal+da+hra
 It =0 if gross<15000
 = 10% of gross if gross between 15000 and 30000
 =20% of gross if gross between 30000 and 50000
 = 30% of gross otherwise
 pf = 10% of gross or 1000 whichever is less

Write SQL statements for

1. Count the number of employees in every designation
2. List the employees of every department in descending order of their net salary
3. List the name and salary of highest salary payer in every department
4. List the name of employee paying highest IT
5. List the total IT paid by each department
6. List the departments in every location
7. Raise the basic salary by 10% for the managers of every department.
8. Find number of employees having at least 10 years of experience in every department.
9. Count the number of employees who are not getting commission in every department

PRACTICAL EXAM SCHEME

Practical Proper - 30 Marks

Table creation & data insertion =10 marks

SQL queries- 4 X 5 marks =20 marks[Queries writing 3 marks (each) and Execution 2 marks (each)]

Viva – voce - 05 Marks

Record - 05 Marks

FIFTH SEMESTER BSc (Computer science)
Computer Science -V

BSC-5.1 JAVA PROGRAMMING

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to Java:

12 hrs

History of Java, Java features, Difference between C/C++ and Java, Java program structure, Java tokens, Statements, JVM, Java and Internet, Java and WWW, Web browsers, Java support system, Java Development Kit (JDK), Application Programming Interface(API), Java Runtime Environment (JRE). Introduction to packages in Java, Applets, Operators & Expressions, Data types, Constants and Variables, Type conversions, Mathematical functions; Control Statements: Decision making and Branching with while, do-while, for and labeled loops; Arrays, Vectors & Strings: Initialization, Declaration

Unit 2-Overview:

10 hrs

Class, Objects, Constructor, Method overloading, Static members; Inheritance: Single, Multilevel, Hierarchical, Visibility modes, Method overriding, Final variable, Abstract methods and classes; Interface: Defining, Extending and implementing assigning interface variables

Unit 3-Packages and multithreading:

10 hrs

Java API Packages, using system packages, naming convention, accessing and using a package, adding a class to packages, hiding classes. Multithreaded programming: Creating a thread, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, thread priority, synchronization, implementing the runnable interface.

Unit 4-Exceptions and Debugging:

08 hrs

Meaning of errors and exceptions, Dealing with errors, Classifications of exceptions, syntax of handling exceptions, advertising the exceptions, throwing and re-throwing exceptions, creating Exception classes, multiple catch statements, finally clause, Debugging techniques – tricks for debugging, Assertions, Java Debugger (JDB).

Unit 5-Applets and Graphics:

08 hrs

Applets basics, applets and application, Life cycle, Life cycle of Applet programming- passing parameter to applets, paint and repaint methods, Graphics class, Line, Rectangle, Circle, Ellipse, Arcs and Polygon, drawing bar charts.

Reference Books:

1. Programming with Java- A primer, 4th Edition, by E Balaguruswamy.
2. The Complete Reference – Patrick Naughton and Schildt
3. Programming in Java – Joseph L Weber

QUESTION PAPER PATTERN FOR V SEMESTER B.Sc (Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: JAVA PROGRAMMING LAB

1. Write a Java program to generate first n odd numbers and pick and display prime numbers among them. Read value for n as command line argument.
2. Write a Java program to create a vector, add elements at the end, at specified location onto the vector and display the elements. Write an option driven program using switch...case.
3. Write a java program to find area of geometric figures using method overloading.
4. Write a Java program to find the circumference and area of the circle using interface.
5. Write a java program to sort the alphabets in the given string.
6. Write a java program to accept student information using array of objects and constructor initialisation.
7. Write a java program to implement constructor overloading by passing different number of parameter of different types.
8. Write a program to implement an applet by passing parameter to HTML
9. Write an applet program to display human face
10. Create an applet to display concentric n circles, input value for n.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

FIFTH SEMESTER BSc (Computer science)

Computer Science -VI

BSC-5.2 UNIX PROGRAMMING

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1.Introduction to Operating system:

10hrs

Definition of OS, functions of operating systems. Early systems – Simple monitors, Batch Systems, Multiprogramming, Time Sharing, Real time, Parallel and Distributed systems Scheduling concepts, Scheduling algorithms: FCFS, Shortest job first, priority scheduling, round robin, Definition of deadlock problem, deadlock characteristics, deadlock prevention and avoidance. File concept –allocation and access methods, directory structures, Contiguous allocation.

Unit 2- Introduction to Unix :

08 hrs

The Unix operating system, , A brief Session, The Unix Architecture, Features of UNIX, POSIX and Single UNIX specification, Locating commands, Internal and External commands, Command Structure, Flexibility of command Usage, Man Browsing the Manual Pages ON-line, Understanding the man Documentation. General-Purpose Utilities: Cal command, date command, echo, printf, bc, script, passwd, who, uname

Unit 3- The File System in Unix:

10 hrs

The file, The Parent –Child Relationship, The HOME Variable, pwd, cd, mkdir, rmdir, Absolute Pathname, Relative Pathname, ls, The Unix File system. Handling Ordinary Files: Cat, cp, rm, mv, more, Thelp subsystem: Printing a File, File, wc, od, cmp, comm, diff, dos2unix and unix2dos, compressing and archiving files, gzip, and gunzip, tar, zip and unzip. Basic File Attributes: Listing file attributes, listing directory attributes, File Ownership, File Permissions, changing file permissions, Directory Permissions, Changing File Ownership

Unit 4-The Vi Editor

10 hrs

Vi basics, Input Mode, Saving Text and Quitting, Navigation, Editing Text, Undoing Last Editing Instructions(U and U), Repeating the last command(.), Searching for a Pattern(/ and ?), Substitution

Unit 5-The Shell

08 hrs

The shell's Interpretive Cycle, Shell Offering, Pattern Matching, Escaping and Quoting, Redirection, /dev/null and /dev/tty, Pipes, tee, Command Substitution, Shell variables. Essential shell programming: Shell scripts, read, using command line arguments, exit and exit status of command, the logical operators && and ||- conditional execution, the if conditional, using test and to evaluate expressions, the case conditional, expr, \$0: calling a script by different names, while, for, set and shift, the here document (<<), trap, debugging shell scripts with set -x, sample validation and data entry scripts.

Reference Books:

1. Sumitabha Das, UNIX System V.4, Concepts and Applications, TMH.
2. Operating systems concepts, Korth

QUESTION PAPER PATTERN FOR V SEMESTER B.Sc(Computer science)**PART -I: 05 Marks**

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: UNIX PROGRAMMING LAB

1. Write a shell script program to perform all arithmetic operation on floating point.
2. Write a shell script program to check whether the given number is positive or negative.
3. Write a shell script program to reverse a number.
4. Write a shell script program to find sum of digit of a number.
5. Write a shell script program to find the sum of the series (sum= $1 + \frac{1}{2} + \dots + \frac{1}{n}$)
6. Write a shell script program to add, subtract and multiply the two given number passed as command line argument.
7. Write a shell script to count number of characters in a given string
8. Write a shell script program to read pattern and file name and search whether the given pattern in a file or not.
9. Write a shell script to read filename from command line argument check whether the file is regular file or directory or by both.
10. Find the number of directory file and ordinary files in the current

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

SIXTH SEMESTER BSc

Computer Science -VII

BSC-6.1 ADVANCED JAVA PROGRAMMING

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1-Review of Java Concepts and AWT, Graphics Programming: 10 hrs

Review of Java Concepts .AWT and AWT Classes, Window fundamentals – Component, Container, Panel, Window, Frame, Canvas. Working with frame window. Graphics Programming: Graphics class, methods, drawing objects, line graphs, polygon classes, working with colours and fonts. Advanced graphics operations using Java2D. Designing simple User Interfaces (UIs) using AWT, Layout Managers.

Unit 2- Swings and event handling: 10 hrs

Event Handling: Basics of Event Handling, the delegation event model, AWT event hierarchy and event classes, Event Listener Interfaces, Adapter Classes, Event queue. Swing: Meaning, need, difference between AWT and swing. The Model-View-Controller (MVC) design patterns, Creating simple UIs using swing, and handling basic events.

Unit 3-Java Beans, Java Archives (JAR): 08 hrs

Meaning and need of Java Beans, Advantages, Bean writing process, Bean properties. Java Archives (JARs): Meaning, need, the JAR utility, Creating JAR files.

Unit 4-File Management and JDBC: 10 hrs

File, creating a file, writing to a file, opening a file, reading from a file, file management, checking existence of a file, deleting a file. JDBC: Meaning, need, concept and structure of JDBC, relation with ODBC, JDBC driver types and their meaning, the JDBC process – loading the driver, connecting to the DBMS, creating and executing SQL statement, Connection object, Statement object, Prepared Statement object, Callable Statement, Result Set, JDBC Exceptions.

Unit 5-Basic concepts of Collections, Generics and Network programming: 10 hrs

Collections: Meaning, need, Collection interfaces, Concrete Collections – Array List, Hash set, Map. Generics: Meaning, need, benefits, generics usage, basics of generic types, type parameter naming conventions, type wildcards, using type wildcards, generic methods, bound types, writing simple generic container, implementing the container, implementing constructors, implementing generic methods.

References:

1. Complete Reference – Java 2: Herbert Schildt, 5th / 7th Edition, Tata McGraw-Hill
2. Thinking in Java: Bruce Eckel
3. Core Java 2: Volume I – Fundamentals: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.
4. Core Java 2: Volume II – Advanced Features: Cay S. Horstmann, Gary Cornell

QUESTION PAPER PATTERN FOR B.Sc(Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: ADVANCED JAVA PROGRAMMING LAB

1. Write an applet to add, remove, select an item in a list
2. Write an applet to display selected geometric figure from a list.
3. Write a program to implement mouse events
4. Write a program to implement keyboard events
5. Write a Java program (console) to store the typed text to a file.
6. Write a Java program to display the content of a file.
7. Write a Java program with JDBC to store the details of a person on to an Oracle database table.
8. Write a Java program with JDBC to access and display the details of a person stored in an Oracle database table.
9. Write a Java program with JDBC to access and delete the details of a given person stored in an Oracle database table.
10. Write a Java program to demonstrate the use of generics.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

SIXTH SEMESTER BSc

Computer Science -VIII

BSC-6.2 SOFTWARE ENGINEERING AND COMPUTER NETWORKS

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to Software Engineering:

10 hrs

IEEE definition of Software and Software Engineering, Software Problems, Software engineering challenges, Software quality attributes, phases in software development (Phased Development process), Definition of Software process, Components of software process, desired characteristics of software process, Software development process models- waterfall model, prototype model and spiral model .

Unit 2- Software design:

09 hrs

Definition of SRS, need for SRS, Characteristics of SRS, Structure of SRS, design objectives ,design principles, module level concepts – coupling and cohesion.

Unit 3- Coding and testing :

09 hrs

Definition of Coding, Programming principles and guidelines, top down and bottom-up Approaches, definition of testing, testing fundamentals, levels of testing, Difference between black box testing and white box testing.

Unit 4-Introduction to Computer networks Network Hardware:

10 hrs

Definition of computer network, Goals of computer network, Types of Networks based on transmission technology - Broadcast, point- to -point, Types of Networks based on size & scale - LAN, WAN, MAN, Protocol hierarchies (Network software), Network topologies – Bus, Mesh, Ring, tree and star.

Unit 5- Network Software, Reference models and Transmission Media:

10 hrs

Reference models - OSI / ISO model, TCP / IP model, ARPANET, Transmission Media - twisted pair, coaxial cable, fiber optics cable, Internet and its applications, Wireless media - Bluetooth, Wi-Fi, internet and its applications

References:

1. An integrated approach to Software Engineering: PankajJalote.
2. Software Engineering a practitioners approach: Roger Pressman.
3. Computer Networks:5th Edition, Andrew S Tanenbaum.

QUESTION PAPER PATTERN FOR B.Sc(Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: PROJECT LAB

PROJECT LAB EXAM SCHEME

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. The project is of 3 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The Project work should be either an individual lone or a group of not more than five members.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The examiner will evaluate the project work as follows:

- Project Report - 10 Marks
- Project Demo - 10 Marks
- Viva-Voce - 20 Marks

KUVEMPU



UNIVERSITY

Revised syllabus

BCA, B. Sc (Computer Science) and BA (Computer Applications)

W.E.F 2019-20

**DEPARTMENT OF P.G. STUDIES AND RESEARCH IN
COMPUTER SCIENCE,**

JANNASHAYADRI , SHAKARGHATTA

SHIMOGA, KARNATAKA

Regulations for BCA course

Eligibility for Admission

1. A candidate who passed the three year Diploma in the branch of computer science, examination conducted by the board of Technical education, Government of Karnataka, shall be eligible for admission to first semester of BCA degree course.
2. A candidate who passed the two-year Pre-University examination in science/commerce of Karnataka state or any other examination considered as equivalent are eligible for admission to the first semester of BCA degree course.
3. A candidate who passed the three year Diploma in the branch of computer science, examination conducted by the board of Technical education, Government of Karnataka, shall be eligible for Lateral admission to the Third semester of BCA degree course.
4. Computational Mathematics-I and II Subjects should be taught by Computer Science Faculty

NEW SYLLABUS FOR BCA (EFFECT FROM 2019-20)

Semester	Paper	No of Hours (Theory)	No of Hours (Practical)	IA	External
I	English	4	-	20	80
	Kannada / Hindi/ Sanskrit/ Urdu	4	-	20	80
	Computational Mathematics - 1	4	-	20	80
	Computer Fundamentals	4	-	20	80
	Introduction to Information Technology	4	-	20	80
	Programming Fundamentals & C-Programming	4	-	20	80
	Excel & C Lab	-	3	20	80
	TOTAL			140	560
II	English	4	-	20	80
	Kannada/Hindi/ Sanskrit/ Urdu	4	-	20	80
	Computational Mathematics - 2	4	-	20	80
	C & Linear Data Structures	4	-	20	80
	Database Management System – 1	4	-	20	80
	Digital Fundamentals	4	-	20	80
	DS & Advanced Excel Lab	-	3	20	80
	TOTAL			140	560
III	English	4	-	20	80
	Kannada / Hindi/ Sanskrit/ Urdu	4	-	20	80
	Non Linear Data Structures using C++	4	-	20	80
	Database Management System – II	4	-	20	80
	System Software	4	-	20	80
	DS Lab Using C++	-	3	20	80
	SQL Using MYSQL	-	3	20	80
	TOTAL			140	560
IV	English	4	-	20	80
	Kannada / Hindi/ Sanskrit/ Urdu	4	-	20	80
	Java	4	-	20	80
	PL/ SQL and Data Warehousing	4	-	20	80
	Software Engineering	4	-	20	80
	Java Lab	-	3	20	80
	PL/ SQL & DW Lab	-	3	20	80
	TOTAL			140	560
V	Advanced programming in java	4	-	20	80
	Web Programming	4	-	20	80
	Operating System	4	-	20	80
	Data Communication	4	-	20	80
	Computer Networks	4	-	20	80
	Advanced java Lab	-	3	20	80
	Web Programming Lab	-	3	20	80
	TOTAL			140	560
VI	Unix Operating System	4	-	20	80
	. Net Programming	4	-	20	80
	Elective - 1 Digital Image Processing / Cloud Computing	4	-	20	80
	Elective – 2 Computer Graphics/Operation Research	4	-	20	80
	Unix & Net Lab	-	3	20	80
	Project Lab	-	3	20	80
	TOTAL			120	480

BCA - 1.3 : Computational Mathematics - 1

PART- A

Unit-1 Sets, Relations and Functions

12 hrs

Definition of a set, sub-set with examples, Venn diagrams, types of sets-equal sets, null set, disjoint sets, finite set, infinite set, power set, cardinality of set. Operations on sets-union and intersection of two sets, complement of a set, difference of two sets, symmetric difference of sets. Algebraic properties of set operations, strings and regular expressions. Definition of a relation with examples, types of relations-empty, universal, trivial, equivalence, reflexive, symmetric, transitive relation (definition and examples only, no problems). Definition of a function with examples, types of function, one-to-one (injective). Binary operation - commutative, associative, identity and invertible (definition and examples only, no problems). Functions for computer science - characteristic function, floor function and ceiling function.

Unit-2 Logic and Reasoning

12 hrs

Definition of proposition or statement, proposition variables, negation of statements, truth table, conjunction, disjunction, implications quantifiers- predicate, universal quantifier, universal quantification, existential quantification. Conditional statement/implication, contrapositive and converse, equivalence or bi conditional, tautology, contradiction, logical equivalence, properties of proposition operation-commutative, associative, distributive, idempotent negation. Simple problems on tautology and equivalence. Rules for validating statements

PART- B

Unit-3 Mathematical Induction and Counting

12 hrs

Principle of mathematical induction, simple problems on principle of mathematical induction. Fundamental principle of counting (statement with examples only), permutations-definition and simple problems. Combinations - definition and simple problems. Pigeon hole principle- statement and proof, extended pigeonhole principle- statement and proof.

Unit-4 Matrices and Determinants

12 hrs

Definition of matrix and order of matrix, types of matrices-column matrix, row matrix, square matrix, diagonal matrix, scalar matrix, identity matrix, zero matrix(definition and examples only, no problems), equality of matrices(definition and examples), simple problems on equality of matrices. Operations on matrices-addition, subtraction, product of two matrices, scalar multiplication of a matrix, inverse of a matrix, simple problems on these operations. Matrices applications in computer science.

Definition of determinant (definition and examples), determinant of matrix of order one , order two and order three(simple problems), properties of determinant(examples only, no verification), applications of determinants and matrices for solving the system of linear equations of two variables and three variables(simple problems), applications of determinant and matrices for checking the system of linear equations for consistency and inconsistency(simple problem).

Refences:

1. Text book of Mathematics – Shanthi Narayan
2. Text book of Mathematics – S. Lipschutz

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit3 and unit4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.

BCA 1.4 COMPUTER FUNDMENTALS

PART- A

Unit 1- Introduction to Computer Systems

12 hrs

Definition of a Computer, History of Computers, Generations of Computers, classification Of Computers, Applications of Computer, Capabilities and limitations of computer. Block diagram of a Computer with functional units (explanation), Parts of a computer system with peripherals (explanation of peripherals), and essential computer hardware , Information processing Cycle. Input and output device: Input devices-key board mouse (explanation with diagram and working), output devices, monitors types of monitors, types of printers – line and page printers, laser printer – working, advantages and disadvantages. Representation of data, text code -EBCDIC, ASCII, UNICODE.

Unit 2 Computer Organisation & Storage Device

12 hrs

Basic computer organization, bus Architecture and types .Primary Vs Secondary Storage, Primary Storage: RAM – SRAM, DRAM, SDRAM, DDR. ROM - PROM, EPROM, EEPROM, cache memory. Secondary Storage: Magnetic Tapes, Magnetic Disks. hard disks, Zip Drive, Flash Drives.

PART -B

Unit 3- MS Word and Power point

12 hrs

MS Word: Working with documents, formatting documents, Setting page style and page layout, Creating Tables, Printing documents, Mail merging.

Power point: Introduction to presentation, Creating presentation, Formatting presentation, Adding effects to presentation, Printing Handouts.

Unit 4 –MS Excel

12 hrs

Spread sheet and its applications, Data Formatting, Working with sheets, insertion and deletion of rows, columns and sheets, using formula in workbooks, creating charts, cell validation, filters.

References:

1. Computer fundamentals- V Rajaraman
2. Computer fundamentals- P B Kottur

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit-3 and unit-4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.

BCA 1.5 INTRODUCTION TO INFORMATION TECHNOLOGY

PART- A

Unit 1-Software

12 hrs

Definition of software, types of software - application software, general purpose and specific purpose, scientific and business software examples. System software - operating system, assembler, compiler, interpreter, linker, loader. Classification of programming languages - machine level, assembly level, high level languages, event driven, object oriented - advantage and disadvantages examples.

Unit 2. Computer Networks

12 hrs

Definition, uses of network, applications of computer networks, types of network- point-to-point, broadcast, LAN, MAN, WAN network topology, introduction to different protocols (TCP/IP, SNMP, SMTP, FTP, HTTP, Telnet, ARP, DNS, Gopher, POP), network transmission Media (twisted pair, coaxial, optical fiber), definitions of network interface card (NIC), Hub, Bridge, Switch, Router, Bandwidth, internet and its applications, understanding world wide web - how the web works, web browsers – examples, features, Telecommunication overview, Client server.

PART- B

Unit -3 E-Commerce

12 hrs

Defining commerce , main activities of electronic commerce, benefits, goals, components, functions, process management, service management, transaction capabilities, types, scope.

Unit – 4 Introduction to clouds, big data and IOT

12 hrs

Cloud- introduction, cloud computing at a glance. Vision of cloud computing, defining a cloud, characteristics, advantages, disadvantages, examples. Big Data – meaning, 3Vs in big data, challenges. IOT- meaning, components, scope, IOT in education.

References:

1. Computer fundamentals- V Rajaraman
2. Computer fundamentals- P B Kottur
3. Mastering Cloud. Computing - RajKumarBuyya, Christian Vecchiola and ThamaraiSelvi
4. Ecommerce concepts and applications – NidhiDhavan

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit-3 and unit-4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.

BCA 1.6: PROGRAMMING FUNDAMENTALS & C

PART -A

Unit 1-Problem Solving Techniques:

12 hrs

Problem solving techniques – problem definition, analysis, design, debugging, testing, documentation and maintenance. Design Tools - ALGORITHM: definition, characteristics, advantages and disadvantages. FLOWCHART - definition, symbols, advantages and disadvantages. Writing an algorithm and flowchart : Area of circle, arithmetical operations, simple interest and compound interest, quadratic equation, largest of three numbers, sum of N natural numbers, factorial of number, Fibonacci series, prime number, reverse a given number, evaluation of series like $\sin(x)$, $\cos(x)$, e^x , $\log(x)$ etc.

Unit 2- C Basics

12 hrs

History of c-programming, Features, basic program structure, character set, tokens, keywords and identifiers. Constants, variables, data types, variable declaration, symbolic constant definition.

PART - B

Unit 3 - Operators

12 hrs

Arithmetic, relational, logical, assignment, increment and decrement, conditional, bitwise and special operators, Arithmetic expressions, precedence of operators and associativity. Type conversion(implicit and explicit) and mathematical functions. Managing I/O operations – reading and writing a character, formatted and unformatted I/O.

Unit 4- Decision making, branching and looping

12 hrs

Decision making - if and if-else statement, nested if, else if ladder, switch statements, conditional operator, goto statement. Looping - while, do-while and for, nested for. break and continue statements. Programs on these concepts.

References :

1. Computer Concepts and Programming, *Padma Reddy*
2. Let us C , Yashwanth Kanetkar
3. Ansi C, *Balagurusamy*
4. Problem solving with C, M. T. Somashekara and D. S. Guru

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit3 and unit4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.

BCA 2.3 - Computational Mathematics -II

PART -A

Unit 1 - Graph theory

12 hrs

Definition of graph, graph as models, matrices and isomorphism, graph terminologies- definitions, properties and examples, Decomposition and special graphs. Paths, cycles and trails -connection in graphs, bipartite graphs, Eulerian circuits. Vertex, degree, bijections paths, cycles and trails-connection in graphs,

Unit 2 : Directed Graphs

12 hrs

Definition of directed graph, properties and examples, vertex degrees, Trees and distance-basic properties, properties of trees, distance in trees and graphs, disjoint spanning trees, spanning trees and enumeration of trees, Hamilton paths and circuits, Decomposition of graphs, special graphs. Optimization and trees-minimum spanning tree, shortest paths, trees in computer science.

PART- B

Unit 3 - Statistics

12 hrs

Definition, scope, characteristics, functions and limitations of statistics. Basic concepts-units/individuals, populations/universe, sample, variable, attribute, discrete variable, continuous variable, qualitative data and quantitative data. Stages of Statistical method – collection, organization presentation, analysis and interpretation of data. Classification of data - definition, objectives, types of classification, frequency, class frequency, frequency distribution ,discrete frequency distribution, continuous frequency distribution, inclusive class and exclusive class, class limits, correction factor, open-end frequency distribution, mid-point or class mark, width/size of class, number of classes, cumulative frequency, frequency density, construction of FDT for discrete and continuous data. Tabulation-definition, objectives, types of tables-one way/simple, two way and manifold tables.

Unit 4 : Central Tendency

12 hrs

Definition, average, arithmetic mean, mode, median, geometric mean and harmonic mean, advantages and limitations. Simple problems on arithmetic mean, geometric mean and harmonic mean. Measures of Dispersion - range, range coefficient, mean deviation, mean deviation coefficient and standard deviation, standard deviation coefficient (definitions only). Problems on mean deviation, mean deviation coefficient and standard deviation, standard deviation coefficient.

Reference s:

1. Introduction to Graph theory by S.Lipschutz
2. Statistics and probability by B.M Aggarwal
3. Statistics by Rajmohan

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit3 and unit4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.

BCA 2.4: C and Linear Data Structures

PART -A

Unit 1- Arrays and Functions

12 hrs

One and two dimensional arrays, array initialization. Strings - declaration and initialization of string variable, reading and writing strings, string handling functions. Functions – Need, syntax of function declaration, all types of functions, nesting of functions, categories, parameter passing mechanism, function with arrays.

Unit 2- Pointers & Structures

12 hrs

Pointer arithmetic, dynamic memory allocation, command line arguments. Structure-Definition, declaration, accessing structure members, structure with in structure, example programs, structure with array, union and difference between structure and union with example programs, typedef, enum

PART -B

Unit 3-Stack

12 hrs

Definition of data structure, types(primitive, non primitive-linear and nonlinear).Linear data structure- Stack: Definition and example, operations, representation of stack in C, evaluation of postfix expression, conversion from infix to postfix using stack table. Recursion: Recursive definition, and process, Recursion in C, writing Recursive programs- factorial. GCD, tower of hanoi, fibanocci, binomial coefficient, efficiency of recursion

Unit 4 –Queue and Linked List

12 hrs

Queue – Definition, operations, representation of queue in C. Types- circular queue, double ended queue. Linked list - Definition and example, insert and delete (any where), search, count and display, . Circular linked list and doubly linked list (concepts only).

References :

1. Computer Concepts and Programming, *Padma Reddy*
2. Let us C – Yashwanth Kanetkar
3. ANSI C, -*Balagurusamy*
4. Data structures using C and C++ - Yedidyahetal
5. Programming in ANSI C - E.Balaguruswamy
6. Data structures and programming design using C - Robert Kruse PIII publications
7. Data structures and applications - Trembly and Sorenson
8. Systematic approach to data structure – Padma Reddy

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit-3 and unit-4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.

BCA-2.5 DATABASE MANAGEMENT SYSTEM-I

PART- A

Unit 1-Introduction

12 hrs

Definitions of Data, database, database system, DBMS, examples, database system applications. Meaning of data and information, database management system vs. file management system, views of data, data independence, data models, database languages, database users and administrators, database system structure, application architecture, advantages of using DBMS, classification of DBMS, meaning of schema and instance.

Unit 2 -E-R Model

12 hrs

Basic-concepts, Definition of Data Models, Using high-level, conceptual data models for database design, , constraints, keys, an example database application, E-R diagram, types of entities, entity sets, attributes, types of attributes, weak entity sets, cardinality ratios (mapping cardinality), Definition of Ordinality, specialization, generalization. Differences between specialization and generalization.

PART- B

Unit 3 –Relational Model

12 hrs

Structure of relational Databases, Relational algebra - select, project. union, set difference, rename, division operations, Modification of the database, queries using relational algebra. Extended relational algebra operations.

Unit 4 - SQL

12 hrs

SQL- Background, basic structure, set operation, aggregate functions, NULL values, nested sub queries, Views, complex queries, Modification of the database, joined relations, Data Definition Language, domain constraints, referential integrity in SQL. Assertions, authorization, privileges in SQL.DDL Commands.

References:

1. Korth, Sudarshan “Database System concepts”, Mcgraw Hill-IV Edition.
2. Navathe, Silberchatz and Elmasri “fundamentals of database Systems”
3. Addison C.J. Date “Introduction to Database systems” Addison-wesley.
4. Bipin C Desai “Introduction to Data base system” Galgotia publications

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit-3 and unit-4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.

BCA-2.6 DIGITAL FUNDAMENTALS

PART- A

Unit 1- Number System and Boolean Algebra

12 hrs

Binary number system, decimal number system, octal number system, hexadecimal number system. Bases inter conversions. Representation of negative numbers - 1's and 2's complements. Codes - BCD, GRAY, EXCESS-3. Laws of Boolean algebra, Evaluation of Boolean expression, De Morgan's theorems and proof, simplification of Boolean expressions using Boolean laws, Basic gates (AND, OR, NOT): truth table, Definition, Boolean expression and symbols, universal gates (NAND, NOR) : truth table, definition, Boolean expression and symbols, SOP and POS form, min term and max term, expression of Boolean equation in Min and Max term (conversion of SOP and POS forms to standard form)

Unit 2- Logic Systems and K- Map

12 hrs

Realization basic gates using NAND and NOR gates. Realization of Boolean expression using basic gates and universal gates. XOR and XNOR gate (working, Boolean expression, symbol and truth table), **K-map method: Rules**, simplification of Boolean equation using K-map (up to 4 variables), without and with don't-care condition, Implementation using basic gates and universal gates, Quine-McCluskey Tabulation method to determine and select essential prime implicants.

PART- B

Unit 3-Combinational Logic:

12 hrs

Half adder and full adder, half subtractor and full subtractor. Code converters - BCD to Excess 3 and BCD to gray code, magnitude comparator, encoders (BCD to decimal), decoder (decimal to BCD), multiplexer(4:1 and 8:1), de-multiplexer(1:4 and 1:8).

Unit 4-Sequential Logic:

12 hrs

Introduction, Flip-flops – SR, JK, D, T, JK-MS (Detailed Study) Registers – Introduction, shift register- types and applications. Counters – synchronous and asynchronous counters (Up, down, up down and Mod counters(asynchronous only)) with timing diagram.

References:

1. Digital Logic and Computer Design- M. Morris Mano
2. Digital fundamentals – B.Basavaraj
3. Digital fundamentals – L Krishnananda

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit-3 and unit-4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.

PART- A

Unit 1 - Introduction to C++ and OOPS

12 hrs

Object Oriented Programming paradigm, Limitations of structures in C, Basic concepts of Object Oriented Programming- Classes, Objects, Data Abstraction and Encapsulation, Polymorphism, Inheritance, Dynamic binding, Message passing, Benefits of OOP, Object Oriented languages, applications of OOP.C++ features, Comparison with C, Structure of a C++ program, input and output statements Keywords, Data types, symbolic constants, type compatibility, declaration of variables, reference variables, operators in C++, control structures.

Unit 2 - Classes Objects, Member Functions And Constructors- Destructors

12 hr

Specifying a class, creating objects, memory allocation for objects, static data members, arrays within a class, local classes. Defining member functions, call by reference, return by reference, inline functions, default arguments, making an outside function inline, nesting of member functions, private member functions, function overloading, static member functions, const member functions, pointer to members, friend and virtual functions. Constructors, parameterized constructors, multiple constructors in a class, constructors with default arguments, copy constructor, dynamic constructors. Destructors.

PART- B

Unit 3-- Operator overloading And Inheritance

12 hr

Overloading unary operators, overloading binary operators, overloading operators using friends, string manipulations using operators, rules for operator overloading, type conversions. Inheritance definition, defining derived classes, types-single inheritance, making a private member inheritable, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance, virtual base classes.

Unit 4 – Trees And Sorting

12 hrs

Tree terminologies, Binary tree, binary tree representation, types of binary tree - linked representation, tree traversals, and binary search tree and their applications, algorithm on searching element in a binary search tree, linear search and hashing, Quick sort, insertion sort, shell sort, radix sort, tree sort, heap sorting.

References:

1. E Balguruswamy, Data Structures using C
2. RB Patel, Expert Data Structures with C++, Khanna book publishing
3. YashwanthKanatkar, Data Structures through C

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BCA-3.4 DATABASE MANAGEMENT SYSTEM- II

PART -A

Unit 1- Relational Database Design

12 hrs

Review of relational algebra and relational calculus concepts, Pitfalls in relational data base design, Normalization for relational databases. Normal forms based on primary keys, General definitions of first, second and third normal forms, Functional Dependency (concept and example) decomposition, Boyce-Codd Normal Form - definition and example, fourth Normal form - Multi valued Dependencies - definition and example.

Unit 2 - Storage and File Structure

12 hrs

Overview of physical storage media, MAGNETIC AND FLASH DISKS – performance measure of a disk optimization of disk block access, RAID, improvement of reliability via redundancy, improvement of performance via parallelism RAID levels, choice of RAID level, File organization – fixed and variable length records, organization of records in files, Data dictionary, Indexing and hashing – basics , Ordered indices, , B+ index files, structure of B+ index tree.

PART- B

1.

Unit 3- Transaction management and Recovery system

12 hrs

Transaction management- Concepts, simple transaction model, storage structure, transaction atomicity and durability. Recovery system- Failure classification, storage, recovery and atomicity- log records, data modification, concurrency control and recovery, transaction commit (concepts).

Unit 4 - PL/SQL

12 hrs

Features of PL/SQL, Advantages of PL/SQL, basic syntax, data types and Subtypes. Variables -: declaration, initializing variables, variable scope, assigning SQL query results to PL/SQL variables. Constants And Literals: Declaring a Constant, The PL/SQL Literal, Operators, Precedence, Conditions: IF-THEN and it's flavours, CASE Statement, Searched CASE Statement, Basic Loop Statement, WHILE LOOP Statement, FOR LOOP Statement, Reverse FOR LOOP Statement, Nested Loops, Labeling a PL/SQL Loop, The Loop Control Statements, EXIT Statement, The EXIT WHEN Statement, CONTINUE Statement, GOTO Statement, STRINGS: Declaring String Variables, String Functions and Operators, ARRAYS: Creating a Varray Type.

References:

1. Data base system concepts - Korth , Sudarshan 6th Edition
2. Muruch's Oracle SQL and PL/SQL
3. Oracle Database 11G PL/SQL Programming

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BCA 3.5 SYSTEM SOFTWARE

PART- A

Unit 1 -Machine Architecture

12 hrs

Introduction, System software and machine architecture, Simplified Instructional Computers (SIC) and its architecture, Instruction Formats of IBM-360. Searching& Sorting - Linear and binary search, comparison, examples. Interchange sort, shell sort, bucket sort, radix exchange sort, address calculation sort, Random entry searching.

Unit 2-Assembler and Loader

12 hrs

Introduction, General design procedure, design of Assembler, statement of problem, data Structure, Format of Date bases, Algorithm for pass 1 and pass 2, look for modularity. Explanation along with flowcharts for both pass 1 and pass 2 (detailed flowchart). Introduction to loader, Loader schemes- compile and go , general loader, Absolute loader, Sub routine linkage, Relocating loader, Direct linking loader, overlays, Dynamic loading.

PART- B

Unit 3 - Macro Language and macro processor

12 hrs

Introduction, Macro instructions, Features of macro facility-macro instruction arguments, Conditional macro Expansion, Macro calls within macro, Macro instruction defining macro. Macro processor implementation: statement of problem, specification of databases and specification of database format, Algorithm and flowchart for processing macro definitions and macro expansion.

Unit 4 – Compiler

12 hrs

Introduction, Statement of problem, Phases of compiler, Detailed study of - Lexical phase, syntax phase, interpretation phase optimization phase, storage assignment phase, code generation phase, Assembly phase, passes of compiler. Data Structures: statement of problem, storage classes and its use.

References:

1. System programming – John. J. Donovan
2. System Software – Leland L. Beck, Third edition, Addison Wesley 1997
3. Systems programming and operating systems –Dhamdare

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BCA - 4.3 JAVA PROGRAMMING

PART- A

Unit 1 - Introduction to Java and Java Program Structure

14 hrs

History of Java, Java features, Difference between C/C++ and Java, Java program structure, Java tokens, Statements, JVM, Java environment- JDK, JSL. Data types, Constants and Variables, Operators & Expressions, Type conversions, Mathematical functions; Control Statements: Decision making, Branching and looping with while, do-while, for and labeled loops; Arrays- Declaration of 1D, 2D arrays, Class, Objects, Constructor, Method overloading, Static members. Strings-Introduction, classes and its methods. Vectors. Wrapper classes. Inheritance: Single, Multilevel, Hierarchical, Visibility modes, Method overriding, Final variable, Abstract methods and classes; **Interface**: Defining, Extending and Implementing assigning interface variables

Unit 2 –Packages and multithreading

12 hrs

Java API Packages, using system packages, naming convention, accessing and using a package, adding a class to packages, hiding classes. Multithreaded programming: Creating a thread, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, thread priority, synchronization, implementing the runnable interface.

PART -B

Unit 3- Exceptions and Debugging

12 hrs

Meaning of errors and exceptions, Dealing with errors, Classifications of exceptions, syntax of handling exceptions, advertising the exceptions, throwing and rethrowing exceptions, creating Exception classes, multiple catch statements, finally clause, tips for using exceptions, Debugging techniques – tricks for debugging, Assertions, Java Debugger (JDB).

Unit 4 – Applets and Graphics

10 hrs

Applets basics, applet types, applets and application, Life cycle of an applet, applet programming- passing parameter to applets, paint and repaint methods, Graphics class, Line, Rectangle, Circle, Ellipse, Arcs and Polygon. Using control loops in applets, drawing bar charts.

References:

1. Java, The Complete Reference – Patrick Naughton and Schildt
2. Programming in Java – Joseph L Weber
3. Java Programming – E Balaguruswamy
4. Object oriented programming with Java – Mt Somashekara Ds Guru Ks Manjunath

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PART- A

12.

Unit 1-Procedures, Functions and Triggers

12 hrs

15.

Parts of a PL/SQL Subprogram, Creating a Procedure, Executing a Standalone Procedure, Deleting a Standalone Procedure, Parameter Modes in PL/SQL Subprograms, Methods for Passing Parameters. Functions: Creating a Function, Calling a Function, Cursors : Implicit Cursors, Explicit Cursors, Declaring the Cursor, Opening the Cursor, Fetching the cursor, Closing the, Cursor, Exceptions: Syntax for Exception Handling, Raising Exceptions, User-defined Exceptions, Pre-defined Exceptions, Triggers: Creating Triggers, Triggering a Trigger

Unit 2– Packages, Collections and Transactions

12 hrs

PL/SQL — PACKAGES: Package Specification, Package Body, Using the Package Elements, COLLECTIONS: Index-By Table, Nested Tables, Collection Methods, Collection Exceptions

TRANSACTIONS: Starting and Ending a Transaction, Committing a Transaction, Rolling Back Transactions, Automatic Transaction Control. OBJECT-ORIENTED: Instantiating an Object, Member Methods, Using Map method, Using Order method, Inheritance for PL/SQL Objects, Abstract Objects in PL/SQL

PART -B

Unit 3 - Data Warehousing and OLAP

12 hrs

Data Warehouse basic concepts: ODS, ETL functions, ODS and DW architecture, Guidelines for implementing DW, Difference between ODS and DW, OLTP and DW, OLTP and OLAP, Data Warehouse Modeling, Data warehouse Schema. OLAP: Characteristics, Multi-dimensional view and data cube, Data cube operations

Unit 4 - Data Mining

12 hrs

Introduction to Data Mining: KDD process, Architecture of Data Mining, Motivating Challenges, Data Mining Tasks, Data Mining Technologies Data Pre processing: Cleaning, integration, transformation, data reduction, data normalization. Data Mining Applications. Classification and Clusters- concepts and examples, Decision tree- concepts, algorithm, creating decision tree using information gain.

References:

1. Pang-Ning Tan, Michael Steinbach, Vipin Kumar: Introduction to Data Mining Addison- Wesley,2005.
2. G.K.Gupta : Introduction to Data Mining with Case Studies, 3rd Edition, PHI, NewDelhi,2009
3. Arun K Pujari: Data Mining Techniques University Press,2ndEdition, 2009.
4. Jiawei Han and Micheline Kamber : Data Mining-Concepts and Techniques, II Edition, Morgan KaufmannPublisher,2006.
5. Alex Berson and Stephen J. Smith: Data Warehousing, Data Mining and OLAP Computing, Mc GrawHill Publisher,1997.

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BCA -4.5 SOFTWARE ENGINEERING

PART- A

Unit 1–Introduction

10 hrs

Definition of software, software problems (industrial strength software, software is expensive, late and unreliable maintenance and rework), software engineering challenges (scale, quality and productivity, attributes), software engineering approach (phased development process, managing process, components).

Unit 2 –Software processes and Software Planning

14 hrs.

Introduction to software process (processes and process modules, component of software process), characteristics of software process(predictability, support, testability and maintainability, support change, early defect removal, process improvement and feedback), and software process models (waterfall, prototype, iterative enhancement model, spiral) comparison of processmodels. Introduction to planning, effort estimation (uncertainties, building efforts, bottom-up, COCOMO model), project scheduling and staffing (overall, detailed scheduling, team structure), risk management (concepts, assessment), project monitoring plan (measurements, project monitoring and tracking).

PART- B

Unit 3 – Analysis and Design

12 hrs

Software requirements (needs and requirement process), problem analysis (informal approach, data flow modeling, object oriented modeling, prototyping), requirement specification (characteristics of SRS, components of SRS, specification language, structure of requirement document), validation. Design: Function oriented design: design principles, module level concept (coupling, cohesion), structure design methodology (DFD, first level factoring).

Unit 4 –Coding and Testing

12 hrs

Coding: programming principles and guidelines (common coding errors, structured programming, information hiding, some programming practices, coding standards), refactoring (basic concepts with examples, common refactoring), verification (code inspections, static analysis, proving correctness, unit testing). Testing: testing fundamentals, black box and white box testing, comparison between black box and white box testing, regression testing, testing process- levels of testing, test plan.

References:

1. An integrated approach to software engineering-Pankaj Jalote.
2. Roger Pressman, Software Engineering- A Practitioner's Approach TMH
3. Ian Sommerville, Software Engineering, Pearson Publications Ltd.

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BCA - 5.1 ADVANCED PROGRAMMING IN JAVA

PART- A

Unit 1 - AWT,Advanced Graphics Programming

12 hrs

Review of Java Concepts .AWT and AWT Classes, Window fundamentals – Component, Container, Panel, Window, Frame, Canvas. Working with frame window. Graphics Programming: Graphics class, methods, working with colors and fonts. Advanced graphics operations using Java2D. Designing simple User Interfaces (UIs) using AWT (Label, Text Field, Choice, List, Checkbox, Checkbox Group, Scrollbar, Button, Text Area, Panel), Layout Manager.

Unit 2 –Event Handling and Swings:

12 hrs

Event Handling: Basics of Event Handling, the delegation event model, AWT event hierarchy and event classes, Event Listener Interfaces, Adapter Classes, anonymous inner class, Event queue. Swing: Meaning, need difference between AWT and swing. The Model-View-Controller (MVC) design patterns, Creating simple UIs using swing (JLabel, JText Field, JComboBox, JList, JCheckbox, JScrollbar, JButton, JRadioButton, JScroll Pane, J Panel, J Tabel, J Tree, JFrame) and handling basic events.

PART- B

Unit 3 - File Management and JDBC

12 hrs

File, creating a file, writing to a file, opening a file, reading from a file, file management, checking existence of a file, deleting a file. JDBC: Meaning, need, concept and structure of JDBC, relation with ODBC, JDBC driver types and their meaning, the JDBC process – loading the driver, connecting to the DBMS, creating and executing SQL statement, Connection object, Statement object, Prepared Statement object, Callable Statement, Result Set, JDBCExceptions.

Unit 4 -Fundamental concepts of Collections, Generics and Java Beans

12 hrs

Collections: Meaning, need, Collection interfaces, Concrete Collections – Array List, Hash set, Map . Generics: Meaning, need, benefits, generics usage, basics of generic types, type parameter naming conventions, type wildcards, using type wildcards, generic methods, bound types, writing simple generic container, implementing container, implementing constructors, implementing generic methods. Meaning and need of Java Beans, Advantages, Bean writing process, Bean properties. Java Archives (JARs): Meaning, need, the JAR utility, Creating JARfiles.

References:

1. The Complete Reference – Java 2: Herbert Schildt, 5th Edition, Tata McGraw-Hill
2. Thinking in Java: Bruce Eckel
3. Core Java 2: Volume I – Fundamentals: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.
4. Core Java 2: Volume II – Advanced Features: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.

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BCA5.2 WEB PROGRAMMING

PART -A

Unit 1–Introduction

12 hrs

Internet, WWW, Web Browsers and Web Servers, URLs, HTTP, Evolution of the Web, Peak into the History of the Web, Internet Applications, Important Components of the Web, Web Search Engines, Application Servers. HTML and DHTML Concepts : Programming structure, different basic tags , Images, Hyper text Links. Lists, Tables, Forms, Frames. Cascading Style Sheets: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The box model, Background images, The and <div> tags.

Unit 2 –The JavaScript

12 hrs

Overview of JavaScript, Execution Environment, Object orientation and JavaScript, Syntactic characteristics, Primitives, operations, and expressions, Arrays, Functions, Pattern matching using regular expressions, Examples. Events and Event Handling, Meaning of client and server, Client-Server architecture, benefits, concept of ports and sockets. Protocol – Meaning, definition, examples, meaning of stateless and state (state full) protocols. HTTP protocol – meaning, http protocol request and response header formats, status codes. Client-Server communication scenario.

PART -B

Unit 3 – JEE Technology Concepts

12 hrs

Multi-tier architecture for application development – Meaning, need, advantages. Meaning of enterprise application and web application, various tiers in enterprise application – client tier, web tier, business tier, enterprise information system tier. Introduction to JEE concepts – Need, advantages, characteristics of JEE technology, the concepts of containers, components and services – meaning of web container, application client container, EJB container.

Unit 4 – Basics of PHP and Java Server Pages Programming Concepts

12 hrs

Introduction to JSP - language structure, advantages, characteristics, comparison between Java and Java Server Pages. Various aspects of Java Server Pages programs, writing and executing JSP programs. Writing dynamic programs using JSP. Database programming through JSP. Basics of PHP : Introduction ,variables ,functions, sessions, date, my sql integrations with php, file uploading.

References:

1. The Complete Reference – J2EE – Jim Keogh
2. J2EE – Kevin Mukhar, James L. Weaver, James P Crume, RonPhillips
3. learningphp and mysql4th Edition Robin Nixon.
4. Begining php-5 and Mysql Cristian Darie.

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BCA 5.3 OPERATING SYSTEM

PART- A

Unit 1–Introduction

12 hrs

Definition of Operating System, need. Early systems – Batch Systems, Multiprogramming, Time Sharing, Parallel and Distributed systems. Special Purpose Systems – Real Time, Embedded Systems, Multimedia Systems, Handheld Systems. Computing Environments – Traditional, Client Server, Peer-to-Peer and Web based. Open Source Operating Systems.

Unit 2 –Process Management

14 hrs

Process concept – meaning of process, sequential and concurrent processes, process state, process control block, threads, Process scheduling – scheduling queues, schedulers, context switch. Operations on Processes – creation and termination. Inter process communication – Independent and co-operating processes. Communication in client-server systems – RPC and RMI. Process scheduling – Basic concepts Processor - CPU I/O burst cycle, CPU Scheduler, Preemptive scheduling, dispatcher. Scheduling criteria, Scheduling algorithm – First-Come-First-Served (FCFS), Shortest Job First (SJF), Priority Scheduling, Round Robin. Multi-level queue scheduling (Concepts only), multi- level feedback queue scheduling (Concepts only). Multiple processor scheduling, real time scheduling.

PART -B

Unit 3–Deadlocks

08 hrs

Definition with example, System model, Dead lock characterization – Necessary Conditions, Resource Allocation Graph, Dead lock prevention, Avoidance and detection, Recovery from deadlock.

Unit 4 –Memory Management, Disk and File Management

14 hrs

Logical and Physical address space, Swapping, Contiguous allocation, Paging, Segmentation, Virtual memory - demand paging and its performance, Page replacement algorithms, Allocation of frames, Thrashing. Secondary Storage Structure and Disk Management: Disk structure & scheduling methods, Disk management, disk reliability. File concepts, Access methods, Directory structure, Protection and consistency semantics, File system structure, Allocation methods, free space management.

References:

1. Abraham Silberschatz and Peter Baer Galvin, Operating System Concepts, Fifth edition, Addison - wesley 1989.
2. Milan Milonkovic, Operating System Concepts & Design, II Edition, McGraw Hill 1992.
3. Stallings, Operating Systems, Pearson Edition.
4. Tanenbaum, Operating System Concepts, Pearson Education
5. Nutt : Operating System, 3/e Pearson Education 2004

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PART- A

Unit 1 - Introduction to Data Communication

14 hrs

Communication model & Data Communication networking –types. Data Transmission- Transmission terminology, Analog & Digital data transmission, Transmission impairments – attenuation, delay distortion & noise. Guided Transmission- types- Twisted pair, coaxial cable & optical fiber – physical description, application & characteristics. Unguided Transmission- wireless transmission: types- Terrestrial type, Satellite, Broadcast radio – physical description, application & characteristics.

Unit 2-Dataencoding

10 hrs

Basics, types and description of different signals, Digital data & digital signals: NRZ, multilevel binary, Bi phase techniques. Digital data & Analog signals: Encoding techniques- ASK, FSK, PSK Analog data & Digital signals: PCM & delta modulation Analog data & Analog signals: Modulation- AM & FM Spread spectrum: Frequency hopping, direct sequence Asynchronous & synchronous transmission: Line configurations- full duplex & half duplex.

PART- B

Unit 3- Data link control & medium access sub

12 hrs

Flow control: Stop and wait & sliding window flow control. Error detection: Parity check, CRC Error control: Stop and wait ARQ, Go Back-N ARQ High-level data link control: basics, Characteristics, frame structure, operation Medium access sub layer- the channel allocation problem. Multiple access Protocol- ALOHA, carriers sense multiple access protocol, collision free protocol.

Unit 4- Multiplexing and Switching

12 hrs

Frequency division multiplexing- characteristics, analog carrier systems, Time division multiplexing- characteristics, link control. Digital carrier system, ISDN user network interface. Circuit switching networks- switching concept, space division & time division switching- Pocket switching networks-principles, switching technique, and packet size. Comparison of Circuit switching & Pocket switching

References:

2. Data and Computer Communications – William Stallings.
3. Computer Networks – Andrew S.Tanen baum.
4. Data Communication – Ulysis D Black.
5. Data Communication and Networking – Behrouz A. Forouzan.
6. Internetworking with TCP/ IP – Douglas E comer, PHI

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BCA 5.5 COMPUTER NETWORKS

PART -A

Unit 1-Basics

14 hrs

Uses of computer networks, network hardware- broadcast networks, point – to -point networks, network software-protocol hierarchies, design issues, interface & services, connection oriented & connection less services, service primitives, OSI reference model- description of each layer. TCP/IP reference model, comparison of the two models, Critique of the OSI model and protocols, Critique of the TCP/IP model and protocols, Example networks-ARPANET,ATM.

Unit 2- The Network layer

12 hrs

Design issues, routing algorithms- the optimality principle, shortest path routing, distance vector routing, and link state routing. Congestion control algorithms- general principle, Congestion prevention policies, traffic shaping. The network layer in the internet - the IP protocol, IP address, and subnet. Internet control protocol.

PART -B

Unit 3- The Transport layer

12hrs

The transport service- services provided to the upper layer, quality service, and transport service primitives. Elements of transport protocol - addressing, establishing a connection, releasing a connection. A simple transport protocol- the example service primitives, the example transport entity. The Internet transport protocol (TCP & UDP)- the service model, the TCP segment header, the TCP connection management. UDP - header.

Unit 4- The Application layer

10hrs

Network security - traditional cryptography, two fundamental cryptographic principles, secret key & public key algorithms.DNS - Name space, SNMP - model.Electronic mail, architecture and services, www.

References:

1. Data and Computer Communications – William Stallings.
2. Computer Networks – Andrew S.Tanenbaum.
3. Data Communication – Ulysis D.Black.
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PART- A

Unit 1-Introduction

12 hrs

The Unix operating system, , A brief Session, The Unix Architecture, Features of UNIX, POSIX and Single UNIX specification, Locating commands, Internal and External commands, Command Structure, Flexibility of command Usage, Man Browsing the Manual Pages ON-line, Understanding the man Documentation. General-Purpose Utilities: Cal command, date command, echo, printf, bc, script, passed, who, uname.

Unit 2 – The File System

10 hrs

The file, The Parent –Child Relationship, The HOME Variable, pwd, cd, mkdir, rmdir, Absolute Pathname, Relative Pathname, ls, The Unix File system. Handling Ordinary Files: Cat, cp, rm, mv, more, The lp subsystem: Printing a File, File, wc, od, cmp, comm, diff, dos2unix and unix2dos, compressing and archiving files, gzip, and gunzip, tar, zip and unzip. Basic File Attributes: Listing file attributes, listing directory attributes, File Ownership, File Permissions, changing file permissions, Directory Permissions, Changing File Ownership.

PART- B

Unit 3 – The Vi Editor

14 hrs

Vi basics, Input Mode, Saving Text and Quitting, Navigation, Editing Text, Undoing Last Editing Instructions (U and U), Repeating the last command (.), Searching for a Pattern (/ and ?), Substitution. Process basics, process status, system process, Mechanism of process creations, Internal and external commands, process states and zombies, running jobs in background, nice, killing process with signals, job control, at and batch, cron, timing process. Simple Filters: The sample database, pr, head, tail, cut, paste, sort, uniq, tr, displaying a word- count list. Filters using regular expressions: grep, basic regular expressions, extended regular expressions.

Unit 4 –The Shell

12 hrs

The shell's Interpretive Cycle, Shell Offering, Pattern Matching, Escaping and Quoting, Redirection, /dev/null and /dev/tty, Pipes, tee, Command Substitution, Shell variables. Essential shell programming: Shell scripts, read, using command line arguments, exit and exit status of command, the logical operators && and ||- conditional execution, the if conditional, using test and to evaluate expressions, the case conditional, expr, \$0: calling a script by different names, while, for, set and shift, the here document (<<), trap, debugging shell scripts with set -x, sample validation and data entry scripts.

References :

1. Sumitabha Das, UNIX System V.4, Concepts and Applications, TMH

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BCA - 6.2 .NET PROGRAMMING

PART -A

Unit 1 - Introduction to C# & .NET platform and Building C# Applications 10 hrs

Introduction to C# and .NET platform : .NET solution, Building blocks of the .NET platform(CLR, CTS, CLS), Role of .NET base class libraries, .NET Aware programming languages, role of common intermediate languages & type metadata and assembly manifests, A tour of the .NET namespaces. Building C# Applications : Role of the command line compiler(csc.exe), Building a C# application using csc.exe, the command line debugger(cordbg.exe), using the visual studio.NET IDE & its debugging, C# pre-processor directives.

Unit 2 - C# language fundamentals 14 hrs

Anatomy of a basic C# class, creating objects: constructor basics, Default assignments & variables scope, variables initialization syntax, basic inputs & output with the console class, understand static methods, arrays & string manipulations, Encapsulation Services, Class Properties , Read and Write only Properties, Static Properties, Inheritance Is As keyword Usage, Controlling Base Class Creation With Base, Sealed Classes, Delegation , Polymorphism, The Virtual and Override Keywords ,Abstract Classes, Abstract Methods

PART- B

Unit 3 - Exception & object life time and Interface and Collections 12 hrs

Exception & object life time :The Basics of Object Life Time, The Role Of Application Roots, Understanding Object Generations, The Role Of .NET Exception Handling, Throwing a Generic Exception ,Catching Exceptions, Properties of Exception, Multiple Exception (Concepts Only),The Finally Block. Interface & Collections : Definition, Implementing an Interface in C#, Interface members at object level, Interface as Parameters, Interface as Return Values, Arrays of Interface Types, Interface Hierarchies, Interface as polymorphic agents, Exploring the system. Collections Namespaces.

Unit 4 – Introducing windows forms 12 hrs

Overview of the system. windows. Forms Namespaces, An Anatomy of a Form, A Simple Form Program, Function with Control Class, The Functionality Of the Form Class, Component class, control class, Programming with windows forms controls : Working with Button types, Check Boxes, Radio Buttons, Group Boxes, List Boxes, Calender control, assigning tool tips for controls. The Two Faces Of ADO. NET, Understanding ADO.NET Data Providers, Understanding The Connected Layer of ADO.NET, Working with Connection Object, Inserting, Updating and Deleting Records

References:

- 1 Pro C# with .NET 3.0 Andrew Troelsen
- 2 2 C# Programming E Balaguruswamy

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit3 and unit4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
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BCA - 6.3.1 ELECTIVE-I DIGITAL IMAGE PROCESSING

PART- A

Unit 1- Digital Image

12 hrs

Introduction: Motivation and Perspective, Scenes and Images, Application: Components of Image Processing System. Visual Preliminaries: Brightness Adaptation and Contrast- Acuity and Contour, Texture and Pattern Discrimination, Shape Detection and Recognition- Perception of Color. Image Formation: Geometric Model, Basic Transformations, Perspective Projection, Camera Calibration- Photometric Model. Digitization: Sampling, Quantization, Visual Detail in the Digital Image, Digital Image, Elements of Digital Geometry.

UNIT-2: Image Processing

12 hrs

Image Enhancement: Contrast Intensification, Smoothing, Image Averaging, Mean Filter, Ordered Statistic Filter, Edge Preserving Smoothing Low Pass Filtering. Image Sharpening, High, Pass Filtering, Homomorphic Filtering. Restoration: Minimum Mean, Square Error Restoration, Least Square Error Restoration, Constrained, Least Square Error Restoration, Restoration by Singular Value Decomposition- Restoration by Maximum A Posterior Estimation, Restoration by Homomorphic Filtering.

PART- B

UNIT-3 :Image Compression

12 hrs

Error Criterion: Lossy Compression methods, loss –less compression, Huffman coding, Run length coding- Block coding, Quad Tree coding- contour coding. Registration: Geometric Transformation, Plane to Plane Transformation, Mapping Problem in Discrete Domain –Stereo Imaging Algorithms.

Multi-Valued Image Processing: Processing of color Images, Processing of Satellite Image, and Medical Image Processing. Segmentation: Region Extraction-Pixel based Approach, Feature Thresholding, Optimum Threshold, Threshold Selection Methods, Multi-level Thresholding, Local Thresholding, Region based Approach.

UNIT-4: Image Analysis and Feature Extraction

12 hrs

Edge and Line Detection: Edge Detection, Derivation operators, Pattern Filling Approach, Morphologic Edge Detection, Edge Linking and Edge Following, Edge elements Extraction by Thresholding, Edge Detector Performance, Line Detection, Corner Detection. Representation: Topological Attributes, Geometrical Attributes, Some other Properties, Description, - Boundary based Description-Region based Description-Relationship. Recognition: Deterministic Methods, Clustering, Statistical Classification, Fuzzy Mathematical Recognition, Syntactic Recognition, Grammar, Recognition Strategy, Tree search, Graph Matching.

References:

- 1) B. Chand and D. Dutta Majumder, Digital Image Processing and analysis, PHI (2001)
- 2) Milan Sonka, "Image Processing Analysis and Machine Vision", PWS Pub. 2nd Ed.
- 3) Adrian Low, Computer vision and Image Processing, McGraw Hill (1991)
- 4) Kenneth R. Castleman, Digital Image Processing, PHI

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BCA - 6.3.2 ELECTIVE-I CLOUD COMPUTING

PART- A

Unit1 - Cloud Computing Basics

12 hrs

Cloud Computing Overview- Applications – Intranets and the cloud – Why Cloud Computing Matters – Benefits – Limitations – Companies in the Cloud Today – Cloud Services.

Unit 2 - Cloud Computing Technology

12 hrs

Hardware and Infrastructure – Clients – Security- Network – Services – Accessing the Cloud - platforms – Web Applications – Web APIs –Web Browsers –Cloud Storage – Overview – Cloud Storage Providers –Standards –Application – Client – Infrastructure – Service.

PART -B

Unit 3 - Cloud Computing At Work

12 hrs

Software as a service – Overview – Driving Forces – Company offerings – Industries– Software plus Services – Overview - Mobile Device Integration –Providers – Microsoft Online.

Unit 4 - Developing Applications

12 hrs

Google – Microsoft – Intuit Quick Base – Cast Iron Cloud – Bungee Connect - Local clouds and Thin Clients – Virtualization – Server Solutions – Thin Clients. Cloud Services for Individuals – Cloud services aimed at the mid-market –Enterprise-Class Cloud Offerings – Migration.

References:

1. Velte T. Antony, Velte J. Toby. andElsen Peter Robert (2010), “Cloud Computing: A Practical Approach”, Tata McGraw- Hill
2. Miller Michael (2008), “Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online”, Que Publishing.
3. Beard Haley (2008), “Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs”, EmereoPvt. Limited.

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BCA- 6.4.1 ELECTIVE-II COMPUTERGRAPHICS

PART -A

Unit 1 - IntroductiontoMultimedia

12 hrs

Definition, CD-ROM and the multimedia highway, Uses of Multimedia, Introduction to making multimedia – The stages of Project, the hardware & software requirements to make good multimedia, Multimedia skills .Multimedia building blocks- SOUND: MIDI, Digital audio, audio file formats. Images: still images, color and file formats. ANIMATION: principles of animation, making animation. VIDEO: using video, how video works, and videostandards.

Unit 2 - Introduction toGraphics applications

12 hrs

CAD , presentation graphics, computer art, entertainment, education and training, visualization, image processing. Display devices – raster scan displays – color CRT, DVST, LCD, 3D viewing devices. Raster scan systems, Random scan systems.

PART-B

Unit 3 -Outputprimitives

12 hrs

Points and lines, line drawing algorithm, DDA algorithm, Bresenham's line algorithm, examples, parallel line algorithm, loading the frame buffer, circle generating algorithm, midpoint circle algorithm, and ellipse generating algorithm. Pixel addressing and object geometry. Color and gray scale levels, color tables, character attributes. Basic Transformations- translation,scaling, rotation, matrix representation and homogeneous coordinates, composite transformations, general pivot point and fixed point rotation, scaling directions, other transformations – reflection, shear, transformation between coordinates, inverse transformations.

Unit 4- WindowingandClipping

12 hrs

Introduction, the viewing transformation, viewing transformation implementation, clipping, Cohen-Sutherland outcode algorithm, Liang-Barsky line clipping algorithm, Sutherland- Hodgeman polygon algorithmand adding clipping to the system, text clipping, exterior clipping, curve clipping.

References:

1. Tay Vaughan "Multimedia – making it work", TMH publication, fifthedition.
2. D Hearn & M P Baker: "Computer Graphics C version", PearsonEducation
3. D Newman and Sproull: "Principles of Interactive Computer Graphics -, TMH,IIedition.
4. Steven Harrington "Computer graphics: A programming Approach", TMH publication. Secondedition
5. Roy plastock and Zhigang Xiang: " Computer graphics". Schaum's outline series, II edition.

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BCA - 6.4.2 ELECTIVE-II OPERATIONS RESEARCH

PART-A

Unit1-Operations Research & Linear Programming

14 hrs

Operations research: Nature and meaning, models characteristics, advantages, scope. Linear Programming Problems: Formulation (both minimization and maximization type) solution of LPP using graphical method. General LPP. Basic solutions and degenerate solutions. Standard form and canonical form. Characteristic features of LPP. Simplex method for solving LPP.

Unit 2 - Transportation Problem

12 Hrs

Big-M method and 2 phase method for solving LPP. Transportation Problem - Formulation, Necessary and sufficient condition for the existence of feasible solution to a Transportation problem. Initial Basic Feasible Solution by North West Corner Rule, Least Cost Method and Vogel's Approximation Method. Optimal solution using U-V method.

PART-B

Unit 3 – Assignment Problem and Game Theory

14 Hrs

Assignment Problem.:Formulation, optimal solution using Hungarian algorithm, traveling salesman problem. Game Theory:Basic definitions, minmax - maxmin principle and optimal strategy solution of games with saddle point, dominance rule for solving a two-person Game, Graphical method for solving two-person game.

Unit 4 -Network analysis

10 Hrs

Basic differences between PERT and CPM, PERT, CPM, Network components and precedence relations, rules of network construction, errors and dummies in network, critical path analysis, project time cost trade-off, resource allocation.

References:

1. S. D. Sharma – Operations research
2. Hamdy A. Taha, “ Operation Research – An introduction” 5th edition, PHI.,
3. KantiSwarup, P. K. Gupta &Manmohan – “Operation Research”, 1996.
4. S. Kalavathy: “Operations Research”, Second Edition – Vikas Publications

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5. The student has to attend at least one question from each unit.

I -SEMESTER

Excel & C Lab

PART- A

- Write DOS commands for the following:
 - To create a file
 - To view a created file
 - To edit the contents of file
 - To rename an existing file
 - To delete an existing file
- Write DOS commands for the following:
 - To make a directory
 - To rename a directory
 - To delete a directory
 - To change the directory
 - To display date, time and version

PART -B

Table A					Use only Formula's to Derive the results	
Sales Person	Gender	Number of Sales	Sales Amount	Sold Month and Year	Questions	Answers
Cara	F	10	8000	12013	Sum of sales amount	
Jessy	F	7	6000	12013	Average of sales amount	
Lewis	M	5	4000	32013	Minimum Sales amount	
Tommy	M	3	2000	42013	Maximum number of sales	
Annie	F	2	2000	12013	Count of Sales Person	
Jack	M	3	2000	52013	Count of Male Sales person	
Hugo	M	1	400	52013	Sum of Sales amount of Female Person	
Jonathan	M	1	400	72013	Average of sales amount of Female Person	
Aaron	M	1	400	12014	Average of Sales amount made in January 2013	
Willy	M	4	2800	82013	Median of Total Sales amount	
Patrick	M	3	900	12013	First Quartile to Sales Amount	
Simmons	M	5	1750	12014	Third Quartile to Sales Amount	
Patrick	M	6	2250	82013	Populate the number of sales for below listed Sales Person (Use formula)	
Taylor	M	2	800	42013		
Boon	M	3	1275	42014	Sales Person	Number of Sales
Walsh	M	1	450	72013	Aaron	
Julie	F	5	2375	22013	Patrick	

- Consider the above excel sheet and derive the answers using formulae
- Demonstration of sorting, filters and advanced filters
- Usage of pivot table.

1. Program to find the biggest and the smallest among 4 numbers using nested if.
2. Program to find the roots of quadratic equation.
3. Program to check whether the given number is Armstrong number, odd or even, perfect square or cube.
4. Program to check whether nth prime is palindrome.
5. Program to find the factors of nth Fibonacci number.
6. Program to convert decimal to binary.
7. Program to generate n terms of the series 1,-2,6,-24,120.....
8. Program to find e^x using n terms of the series $1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots$
9. Program to count the number of vowels, consonants and special characters in a string by reading the string character by character.
10. Generate n prime numbers and print them in the following pattern

$$\begin{array}{ccccccc} & & 2 & & & 2 & \\ & 3 & 5 & \text{OR} & 3 & 5 & 7 \\ 7 & 11 & 13 & & 11 & 13 & 17 & 19 & 23 \\ 17 & 19 & 23 & 29 & \dots & 29 & 31 & 37 & 41 & 43 & 47 & 53 & \dots \end{array}$$

PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

DOS (any 5 commands) (10 marks)	Writing of DOS Commands	5 Marks
	Error free execution of DOS Commands	5 Marks
MS Excel (10 marks)	Any five functions from questions 1 2 and 3 Proper syntax and result (2 marks each)	10 marks
C- Program (40 marks)	Flowchart/Algorithm	5 Marks
	Program writing	20 Marks
	Correct program and Error free compilation	10 Marks
	Correct output	5 Marks

II -SEMESTER

DATA STRUCTURES & Advanced Excel Lab

PART -A

1. All types of data validation
2. Data visualisation using charts
3. Data visualization using scatter charts, spark lines and gauge charts
4. Usage of hyper links.

PART -B

1. Program to insert an element at given position in an array.
2. Program to multiply two matrices using functions.
3. Program to swap two integers using function with call by value and call by reference mechanism.
4. Program to create a dynamic array of n elements and find their sum and print in reverse order using functions with pointers(sum(int *,int)and rev_print(int *,int))
5. Program to store information of n students (name, regno, dob, m1,m2,m3,tot, avg and result) in an array of structures and find total, average and result using function.
6. Program to find a^b using union to store the values of a, b and a^b (for both int and/or float values of a and b)

PART- C

1. Program to implement the operations of stack using array.
2. Program to implement the operations of circular queue.
3. Program to convert infix expression to prefix notation.
4. Program to evaluate postfix expression.
5. Program to implement any three recursive functions.
6. Program to implement queue using linked list.
7. Program to evaluate an expression using linked list

PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

MS Excel (10 Marks)	Any one problem from the list	10 Marks
C- Program (25 marks)	Flowchart/Algorithm	5 Marks
	Program writing	10 Marks
	Correct program and Error free compilation	5 Marks
	Correct output	5 Marks
Linear Data Structure (25 marks)	Algorithm	5 Marks
	Program writing	10 Marks
	Correct program and Error free compilation	5 Marks
	Correct output	5 Marks

III- -SEMESTER DS Lab Using C++

PART- A

1. Consider a class student with data members name, regno, course, m1, m2, m3 and member functions getdata(), showdata(), result() to read, print and tabulate result. Write C++ program to store the details of n students and display their result in tabulated form.
2. Write a C++ program to define a class BankAccount including the following class members and store information of n customers and display their details. DataMembers:, cust name, accno, balance.
Member Functions: a) getdata(custname,accno,balance). b) display(). c).Transaction(tr_type,amt) if Tr_type='D' transaction is deposit else transaction is withdrawal. This function should update the balance according to tr_type after checking the minimum balance of Rs 1000.
3. Write C++ program to demonstrate operator overloading
4. Program to demonstrate the use of simple, parameterised and copy constructors
5. Program to demonstrate inline and friend function.
6. Program to demonstrate function overloading.
7. Program to demonstrate multiple or multilevel inheritance

PART- B

1. Program to demonstrate the operations of doubly linked list
2. Program to demonstrate tree traversal
3. Program to implement tree sort.
4. Program to implement quick sort
5. Program to implement heap sort.
6. Program to implement radix sort.
7. Program to demonstrate time and space complexity in binary and linear searching
8. Program to compare shell and insertion sort methods.

PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

C++- Program (25 marks)	Program writing	15 Marks
	Correct program and Error free compilation	5 Marks
	Correct output	5 Marks
Linear Data Structure (35 marks)	Flowchart/Algorithm	10 Marks
	Program writing	15 Marks
	Correct program and Error free compilation	5 Marks
	Correct output	5 Marks

III-SEMESTER SQL LAB

- I. Create emp and dept tables as below and write SQL statements for the following queries
 Emp(ename not null, eno primary key, doj date, dob ,mgrno self reference key, salary >0 , comm, deptno foreign key)
 Dept(dname not null, dno primary key, location)
1. Find the employee details in ascending order of their name and descending order of their salary
 2. Find the details of all employees in the research department
 3. Find the minimum, maximum and average salary of each department
 4. Find department name having least number of employees
 5. Find the department name having highest annual payroll
 6. Add an employee under the manager smith
 7. Find the employees who are not getting commission
 8. Display the eno, name manager name and department name in the order of their department
- II. Create tables as below Student(name string, regno string primary key, dob date, doj date ,course string foreign key) Markscard(regno foreign key, sem string, sub1 number, sub2 number, sub3 number, tot number, avge number, result string)
 Calculate total, average and result using update statement
 Write SQL statements for the following queries.
1. List the names of students studying in BCA course in the order of their joining
 2. Find the name of student who has scored highest marks in every sem of each course
 3. Count the number of students in each course (consider only distinct students of the course)
 4. Find the course having second highest number of students
 5. Raise the marks of sub3 in III sem BCA students by 5% if the student has failed in that subject
 6. Display the details of student 'xxx' in every semester.
- III. Dept(deptno integer pkey, dname string not null, loc string not null)
 Emp(eno integer pkey, ename string, deptno fkey, desgn string not null, bsal number>0)
 Salary(eno fkey, da, hra, gross, it, pf, net, comm) DESGN ARE manager, clerk, salesman.
 Comm=5% of basic if desgn=salesman otherwise null. Da=15% bsal hra = 7% of bsal
 gross=bsal+da+hra.
 IT =0 if gross<15000
 = 10% of gross if gross between 15000 and 30000
 =20% of gross if gross between 30000 and 50000
 = 30% of gross otherwise
 PF =10% of gross or 1000 whichever is less. Calculate salary using update statement
 Write sql statements for
1. Count the number of employees in every designation
 2. List the employees of every department in descending order of their net salary
 3. List the name and salary of highest salary payer in every department
 4. List the name of employee paying highest IT in each department
 5. List the departments in every location
 6. Raise the basic salary by 10% for the managers of every department.

- IV. Create tables as below
Employee(eno primary key, ename, street, city)
Company(cno primary key, cname, city)
Works(eno foreign key, cno foreign key, sal>0)
Manages(mno foreign key from employee table , eno foreign key from employee table)

Write sql statements for the following queries

1. Find the name of all employee working in the city in which they live
2. Find the company having most employee
3. Count the number of employees under each manager.
4. Find the company having second highest payroll
5. Find employee drawing more salary than his manager in every company
6. Raise the salary of every manager by 25%
7. Find name of employees who are not having managers
8. Find average, highest and lowest salary of every company
9. Delete the employees and the information of company 'xxx'

PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

Table creation	10 Marks
Inserting proper data	08 Marks
Table updation (if necessary)	12 Marks
5 / 7 writing	15 / 21 Marks
Execution	15 / 21 Marks

IV -SEMESTER

PLSQL BASIC PROGRAMS

PART - A

1. Create a library table with attributes book id, author_name, publisher, price and edition. Write PL/SQL code block to accept the publisher name and count number of books under that publisher and display it. Also display the publisher with maximum publication.
2. Write a function to display employee name with distinct salaries
For eg
if a 's salary is 100
b 's salary is 200
c 's salary is 100
display either (a or c) and b
3. Write a function to rank the employees based on their salary (use RANK function)
4. Write a function to validate the Employee email id.
5. Write a procedure to capture the error log in a table in case of an exception using Autonomous_transaction,
6. From employee table, store ename and salary in varrays and display the contents of the arrays in table format.
7. Write an Anonymous block which raise a user defined exception on thursday?
8. Write an anonymous block using associative array that is indexed by a string, populates it, and prints it.

PART -B

1. Write a pl/sql code block to create a table and menu driven code to add, modify and drop specified column in it.
2. Write a pl/sql code block to create a database and menu driven code to add, rename and drop specified table into it.
3. Write a PL/SQL cursor program which is used to calculate total salary from emp table without using sum() function?
4. Create a trigger to record the changes like insert, update, delete over the employee table (The changes should be recorded in new audit table Employee_au)
5. Write a function to remove the duplicates in the employee table and copy all the records into another new table.
6. Write a function using bulk collect , to process set of 100 records in one iteration
7. Write a statement trigger on emp table such that the insertion is possible only on Thursday.
8. Write a function using dynamic sql statements , where the column names and the table name should be provided as input to the function.
9. Write an anonymous block to create nested tables and compare the values in nested tables
10. Write an anonymous block using multilevel VARRAY
11. Write an anonymous block to check if a collection element exists or not ?
12. Write a function using NEXT and PRIOR to access the elements in a collection TABLE

PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

Part A (20 marks)	Program writing	10 Marks
	Error free compilation	05 Marks
	Correct output	05 Marks
Part B (40 marks)	Program writing	20 Marks
	Error free compilation	10 Marks
	Correct output	10 Marks

IV -SEMESTER

Java Lab

PART- A

1. Write a Java program to display only those multi-digit prime numbers between a given range whose digit sum is prime. Display the prime number and its digit sum side by side. Read the value for the range using *readLine()* method of *BufferedReader* class.

Sample output:

If range is; m = 20, n=50

Prime number	Sum of digits
23	5
29	11
41	5
43	7
47	11

2. Write a Java program to sort the elements of a square matrix. Read the order and elements of the matrix during execution. Before sorting the elements of the matrix, display the source matrix.

Sample output:

Input Matrix is:

20 2 35

4 16 7

41 3 2

Matrix elements after sorting:

2 2 3

4 7 16

20 35 41

3. Write a java code to create a class with data members name, category, doj, and fees and static members total_fee, categorywise_no_students, methods to Insert data using parameterized constructor, display student information along with total fees and number of students in each category.
4. Write java program to demonstrate method overloading to generate random numbers, random alphabet sequence and random strings.
5. Assume that an examination authority conducts qualifying examination for candidates twice each year. First, in the month of June, second, in the month of December. Before the exam, it opens a registration process so that candidates register themselves. After the end of the registration dates, the authority consolidates the list of candidates and generates the unique register numbers. These numbers are assigned to each candidate. The format of the register numbers is as below. Each register number should contain exactly 10 characters.

	year of Registration	cle	cial Number
--	----------------------	-----	-------------

For example, if year of registration 2018, cycle 2 and there are five candidates registered then, registration numbers are: QE20182001, QE20182002, QE20182003, QE20182004, QE20182005.

The serial numbers should contain exactly 3 digits. To maintain it, prefix zeros as needed. (up to 9 serial number should be prefixed with two zeros, after 9, upto 99 it should be prefixed with single zero and after 99, no zeros). Write a Java program to generate the registration numbers as per the above requirement.

6. Write a Java program to read name, register number, date of birth, address, phone number a student. Concatenate these to frame a single content by delimiting each detail with a special symbol, pass it to a method which should separate and display the details of the student. Declare a class containing the following methods:

void getInformation() – to read student information. It should call *concatenate(,,,) by passing relevant information.*

void concatenate(String name, string regNo, String dob, String address, String phoneNo)
to join the information to frame a single content. It should call

extractInformation(...) by passing the concatenated information.
void extractInformation(String joinedInfo)

to extracted concatenated contents and to display the information.

Declare another class to contain main () method which calls *void getInformation()*.

Sample output:

Student Name: Venkata Krishna

Register Number: BC171128

Date of Birth: 10/05/1996

Address: No. 5, First Cross, Nehru Nagar, Sagar.

Phone Number: 9900990099

Concatenated content:

Venkata Krishna%BC171128%10/05/1996%No. 5, First Cross, Nehru Nagar, Sagar.%9900990099

(Application: This is the way using which collection of information is communicated between client and server in networked environment)

7. Consider class person with fields name, address and date of birth and methods read_data() and show() and another class employee inherited from person class with fields emp_id, date of join and salary and methods read() and show(). Write java program to implement the concept of single inheritance with method overriding concepts for the above classes.

PART B

1. Write a Java program to create a vector, add elements at the end, at specified location onto the vector and display the elements. Write an option driven program using switch...case and also insertion of any type of objects must be possible. Read input as strings and find the type of data and convert them into appropriate objects of appropriate classes. (Ex: 10 must be converted to object of Integer class, 2.5 into object of Float class etc.). Handle exception while converting the inputs.
2. Declare an interface containing methods *float addition(float x, float y)* and *float subtraction(float x, float y)*. Declare the classes implementing the interface to perform respective operations as listed below.

Bank - to carryout deposit and withdrawal operations. In addition to the implementation for the abstract methods, the class should contain additional methods to read and display customer information to perform the respective transaction.

EmployeeSalary - to calculate the gross and net salary. In addition to the implementation for the abstract methods, the class should contain additional methods to read and display employee information, allowance amount and deduction amount to perform the respective transaction.

Main class - which instantiates above two classes and calls respective methods.

3. Write java program to demonstrate multi level inheritance using appropriate real life example.
4. Write a java program to create a package Number which contains a class with three static methods prime, fibanocii and Armstrong that checks whether the passed value is belongs to the corresponding types.
5. Write a java program to demonstrate multithreading using runnable interface.
6. Write an applet to display the address of a person (atleast 4 lines) using parameter passing concept. Appropriate message should be displayed for wrong input.
7. Write an applet to draw a polygon based the number of sides of the polygon as input. Ex. If sides =3 it should draw a triangle, for 4 square for 8 octagon etc.
8. Write an applet to draw n squares, rectangle and circles.

PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

Part-A (25 marks)	Program writing	15 Marks
	Correct program and Error free compilation	5 Marks
	Correct output	5 Marks
Part-B (35 marks)	Program writing	20 Marks
	Correct program and Error free compilation	10 Marks
	Correct output	5 Marks

KUVEMPU



UNIVERSITY

Revised syllabus

BCA, B. Sc (Computer Science) and BA (Computer Applications)

W.E.F 2019-20

**DEPARTMENT OF P.G. STUDIES AND RESEARCH IN
COMPUTER SCIENCE,**

JANNASHAYADRI , SHAKARGHATTA

SHIMOGA, KARNATAKA

NEW SYLLABUS FOR B.A (Computer Applications)
(EFFECT FROM 2019-20)

Paper code	Semester	Subject	Weekly hours	Internal marks	External marks	Practicals	Total
BAC-1	I	Computer Fundamentals	4+3	10	50	40	100
BAC-2	II	C-programming	4+3	10	50	40	100
BAC-3	III	Introduction to Data Structure	4+3	10	50	40	100
BAC-4	IV	OOPS with C++	4+3	10	50	40	100
BAC-5.1	V	JAVA	4+3	10	50	40	100
BAC-5.2	VI	DBMS	4+3	10	50	40	100
BAC-6.1	VII	Internet Programming	4+3	10	50	40	100
BAC-6.2	VIII	SE&CN	4+3	10	50	40	100

FIRST SEMESTER BA (Computer Applications)

Computer Applications -I

BAC-1 Computers Fundamentals

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction:

10 hrs

Definition of computer, Characteristics of computer, history of computers, generations of computer, functional units of a computer, types of computers-based on principle of working, based on size & speed, Definitions of digital computer & analog computer, Definition of super computer, example for super computer.

Unit 2- Hardware:

10 hrs

Input Device- Keyboard & mouse, OCR, OMR. Output device- monitor and brief description of CRT monitor, Printer and brief description of dot matrix printer, Projector and Headphone (Definition and Uses). Memory-Primary memory: RAM, types of RAM, ROM and its types, Difference between RAM & ROM, Secondary memory: Brief description of working of hard disk and floppy disk, Types of CD-ROM.

Unit 3-Software :

10 hrs

Definition of software, types of software's – application, system and utility software, Definitions of assembler, compiler, interpreter, linker, loader. Types of Programming Languages -assembly language and machine level language (advantage and disadvantages). Definition of operating System, functions of an operating system, types of operating system, MS DOS Commands with syntax and example (copycon, type, copy, rename, del, make directory, remove directory, dir and its types, copy files from one drive to other drive, tree, hiding files)

Unit 4-Problem solving techniques:

09 hrs

Algorithm-definition, Characteristics, Notations, Advantages and Disadvantages. Flowchart-Definition, Symbols, Advantages and Disadvantages. Writing an algorithm and flowchart: Area of circle, Arithmetical operations, simple interest and compound interest, Swapping of two numbers, largest of two numbers, factorial of a number, reverse a number, Fibonacci series.

Unit 5-Logic gates:

09 hrs

Binary number system- Conversion of decimal number into binary number and Conversion from Binary to Decimal number system. ASCII code(brief), Gates – AND, OR, NOT, NAND, NOR, XOR (Definition, Truth Table & Logic Symbol), De-Morgan's Theorem (Statement and Proof). Boolean Laws.

References:

1. Computer fundamentals- P B KOTTUR
2. Computer fundamentals- RAJARAMANNA
3. Digital Logic and Computer Design- M. Morris Mono

QUESTION PAPER PATTERN FOR I SEMESTER B.A (Computer Applications)**PART -I:** 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL :COMPUTER BASICS LAB

1.DOS COMMANDS: DATE , TIME, CLS, COPY CON, TYPE, DIR with wild cards, MD, CD, RD, COPY, XCOPY, FORMAT, DISKCOPY etc.,.

2.MS-WORD:Drafting, Entering, Working with all Menus, Using different fonts and colours the following:

1. Bio-Data
2. Application for Job
3. Joining Report
4. Creation of Marks Card

3.MS-EXCEL:Drafting, Entering, Working with all Menus, Using different fonts and colours the following:

1. Bio-data
2. Creation of marks card
3. Result calculation

4.POWERPOINT: Formatting, updating and printing of the following:

1. Text matter with different fonts
2. Preparing Charts : Pie Chart
3. Preparing Graphs: Bar Graph
4. Introducing Animation
5. Introducing Sound Effect
6. Using Hyperlinks

PRACTICAL EXAM SCHEME

- Practical Proper - 30 marks
- ✓ **DOS COMMANDS**–Any two 2X 5marks=10 m
- ✓ **marks** (writing-2 marks and execution-3marks)
- ✓ **MS-WORD/MS-EXCEL/POWERPOINT**-20marks(writing-10marks and execution-10 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

SECOND SEMESTER BA (Computer Applications)

Computer Applications -II

BAC-2 C- Programming

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1-Introduction to C:

10 hrs

History of C, features of C, basic structure of C, character set, tokens- keywords, identifiers, constants, variables, strings, definition, types, rules for naming, syntax for the declaration, symbolic constant definition.

Unit 2- Operators:

10 hrs

Increment and Decrement operators, Arithmetic, relational, logical, assignment and bitwise operators, conditional operator and special operators of C, data type conversion, precedence and associativity of operators. Mathematical functions. Formatted and unformatted Input and Output functions – gets(), puts(), getchar(), putchar(), printf() and scanf().

Unit 3-BranchingControl Structures:

09 hrs

Conditional Control Structures: If Statement, if-else statement, nested if, Switch statement (Explanation with syntax, flowchart and example), goto statement (syntax and example, use).

Unit 4- Looping Control Structures:

09 hrs

while, do-while and for statements (Explanation with syntax, flowchart and example),Nested for statement. Unconditional control statements - break continue, return and exit(syntax and example).

Unit 5-Arrays and Functions:

10 hrs

Definition of array, Declaration and initialization, One and two dimensional arrays, string definition, Declaration and Initialization of String variable, String handling functions. Definition of Function, syntax for function declaration and function definition, types of functions, Recursion –definition and example.

References:

1. Computer Concepts and C Programming by P B Kottur.
2. Ansi C, by Balagurusamy E

QUESTION PAPER PATTERN FOR II SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL : C PROGRAMMING

1. Conversion of temperature given in Degree Fahrenheit to temperature in degree Celsius using the formula $C = (F-32)/1.8$ and vice-versa.
2. Find the biggest among two numbers.
3. Find whether the entered number is odd or even.
4. Arithmetic operations using switch statement.
5. Check whether an entered number is Prime number or not.
6. Find the Fibonacci series between M and N.
7. Searching an element in an array.
8. Addition of two matrices
9. Find the factorial of a number using function.
10. Perform swapping of two numbers using functions

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

THIRD SEMESTER BA (Computer Applications)

Computer Applications -III

BAC-3 INTRODUCTION TO DATA STRUCTURES

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction :

10 hrs

Definition of Structure, syntax and example for structure declaration. Definition of union, syntax and example for union declaration, difference between structure and union. Pointers–Definition, Declaration, Examples. Dynamic memory allocation functions – syntax and examples. Definition of Data Structure and types of data structures with examples.

Unit 2- Stack and recursion:

10 hrs

Definition and example of stack (LIFO), operations of stack with algorithms, applications of stack, algorithm for the conversion of infix to postfix expression. Tower of Hanoi problem and Factorial of a number using recursion.

Unit 3- Queue :

10 hrs

Definition and example of Queue (FIFO), operations on queue, types of queue – ordinary queue and circular queue (definitions only), disadvantages of ordinary queue. Linked list–Definitions and types of lists – Single Linked List, Doubly Linked List (definitions only).

Unit 4-Tree :

09 hrs

Definition of a Tree, Definition of root, left sub tree, right sub tree, degree of node, terminal node, depth, Definition of Binary tree, types of binary tree (definition only), Algorithm for tree traversal.

Unit 5-Sorting and searching :

09 hrs

Definition of sorting, explanation of bubble sort, radix sort and merge sort with examples. Definition of searching, explanation of Binary search and Linear search with examples.

References:

1. Systematic approach to data structure –A M Padmaredy
2. Programming in ANSI C - E Balaguruswamy
3. Datastructures and applications - Trembly and Sorenson

QUESTION PAPER PATTERN FOR III SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL :DATA STRUCUTRES LAB USING C

1. Employee program using structure.
2. Implementation of stack
3. Recursive program to simulate Tower of Hanoi concept
4. Recursive program to find factorial of a number
5. Implementation of queue
6. Implementation of linked list
7. Binary tree traversals
8. Bubble sort
9. Binary search
10. Linear Search

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

FOURTH SEMESTER B.A (Computer Applications)

Computer Applications -IV

BAC-4 OBJECT ORIENTED PROGRAMMING WITH C++

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to OOP:

10 hrs

Object Oriented Programming paradigm, Basic concepts of Object Oriented Programming- Classes, Objects, Data Abstraction and Encapsulation, Polymorphism, Inheritance, Dynamic Binding, Message passing, Benefits of OOP, Object Oriented languages, applications of OOP.

Unit 2-Introduction to C++:

10 hrs

Difference between C and C++, Structure of a C++ program, input and output statements, tokens - Keywords, identifiers, constants, strings and operators, reference variables – definition and example, special operators in C++, brief introduction to control structures in C++.

Unit 3-Classes Objects and Member Functions:

10 hrs

Difference between structure and class, syntax and example for class declaration, Definition of data member and member function, Defining member function inside and outside the class, inline functions, memory allocation for objects, static data members and static member functions, function overloading, definition of friend function, syntax and example for the declaration of friend function, special characteristics of friend function.

Unit 4-Constructors, destructors and Operator overloading:

09 hrs

Definition of a constructor, types - parameterized constructor, default constructor, copy constructor, special characteristics of constructor, definition of a destructor, special characteristics of destructor, definition to Operator overloading, overloading binary operator (+) to add two complex numbers, rules for operator overloading.

Unit 5: Inheritance and templates:

09 hrs

Inheritance definition, forms of inheritance, syntax and example for defining derived classes, visibility modes, explanation of multilevel inheritance and hybrid inheritance with examples. Definition of templates, syntax and example for class and function template.

Reference Books:

1. Object Oriented Programming with C++ - E Balaguruswamy
2. C++ - The Complete Language – BjarneSchildt
3. Object Oriented Programming in Turbo C++ - Robert Lafore

QUESTION PAPER PATTERN FOR IV SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL :C++ LAB

Write a C++ Program:

1. Which reads a radius of a circle and computes the area of the circle.
2. Which takes an 'n' digits integer number as input and computes the sum of the digits and prints it.
3. To check whether the number is palindrome or not.
4. To find the result of a student using class concept.
5. To Define a class employee having data members name, basic salary, net salary with the member function getdata(), showdata(). Calculate the net salary assuming appropriate % for all allowance and deductions using class concept.
6. To concatenate two strings using library functions.
7. To print Fibonacci series using constructor.
8. To find biggest of two numbers using function overloading.
9. To calculate area of triangle, rectangle and circle using function overloading.
10. To implement Multilevel inheritance by creating classes: Grand Father, Father and Son

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

FIFTH SEMESTER B.A (Computer Applications)

Computer Applications -V

BAC-5.1 DATABASE MANAGEMENT SYSTEM

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction DBMS:

10 hrs

Meaning of data and information, definitions of database, applications of database system, definition of DBMS, disadvantages of file processing system (advantages of DBMS), three levels of data abstraction, difference between schema and instance, definition of data models, types of data models (brief explanation), database languages – DDL and DML.

Unit 2- E-R model :

10 hrs

Different types of database users, functions of Database Administrator (DBA), basic-concepts - Primary keys, foreign key, super key, definition of E-R diagram, symbols used in E-R Diagram, E-R diagram for Banking enterprise, E-R diagram for Book store, types of entities, entity sets, attributes, types of attributes, weak entity sets, cardinality ratios (mapping cardinality).

Unit 3- Relational model:

10 hrs

Fundamental operations of Relational algebra - select, project, union, set difference, join, division operations (explanation with examples). Types of aggregate functions – MAX, MIN, SUM, COUNT and AVERAGE (Definition with example).

Unit 4-SQL:

09 hrs

Definition of Query, explanation of basic structure of SQL – Select, from and where clauses in SQL, data types in SQL, explanation of set operation in SQL – Union, intersection, except, NULL values.

Unit 5- Database:

09 hrs

design Pitfalls in relational database design, definition of Normalization, Various types of Normal forms (Definitions only) – First Normal form, Second Normal form, Third Normal form, Boyce-Codd Normal Form (BCNF).

Reference Books:

1. Korth, Sudarshan “Database System concepts”, Mcgraw Hill-IV Edition.
2. Navathe, Silberchatz and Elmasri “fundamentals of database Systems”-Addison Wesley-2004
3. C.J. Date “Introduction to Database systems” Addison-wesley.
4. Bipin C Desai “Introduction to Data base system” Galgotia publications

QUESTION PAPER PATTERN FOR V SEMESTER B.A (Computer Applications)**PART -I: 05 Marks**

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL :SQL LAB

- I. Design an ER-Diagram for representing the BANK scenario.
- II. Design an ER-Diagram for representing the College Library Scenario.
- III. Use the default EMP and DEPT tables to write SQL statements for the following queries
 1. Find the employee details in ascending order of their name and descending order of their salary
 2. Find names of all employees whose name starts with 's'.
 3. Find names of all employees who have at least 6 characters in their name.
 4. Find the details of all employees in the research department
 5. Find the minimum, maximum and average salary of each department
- IV. Create table with the following fields:
TEACHER (teacher-Id, Name, Subject(sub1,sub2,sub3))
Write SQL queries to perform the following:
 1. List all the teachers whose teacher-Id lies between 10-20.
 2. List all the teachers whose name starts with letter 'a'.
 3. List all the teachers who are teaching 'sub2'.
 4. List the teacher whose teacher-Id is 12 and teaching 'sub2'.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Writing ER-Diagram-10 Marks
- ✓ Table creation & data insertion -10 marks
- ✓ SQL queries- 2 X 5 marks =10 marks[Queries writing 3 marks (each) and Execution 2 marks (each)]
- Viva – voce - 05 Marks
- Record - 05 Marks

FIFTH SEMESTER BA (Computer Applications)

Computer Applications -VI

BAC-5.2 JAVA PROGRAMMING

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction:

10 hrs

History of Java, Java features, Difference between C/C++ and Java, Java and Internet, Java and WWW, Web browsers, Java support system, Java Development Kit (JDK), Application Programming Interface(API), Java Runtime Environment (JRE).

Unit 2-Overview:

10 hrs

Structure of Java program, Java tokens, java character set, Java Statements, Implementing Java program, Java Virtual Machine, difference between Applets and applications,

Unit 3- Control Statements and operators in Java:

10 hrs

Constants, Variables and Data Types in Java, Type casting, Arithmetic operators, relational operators, logical and assignment, conditional, bitwise and special operators, Control Statements: Branching Decision making – if, if-else, nested if, else-if ladder & switch and Looping statements with while, do-while, for statements.

Unit 4- Method overloading:

09 hrs

Definition of a Class, syntax and example for the declaration and for defining the class, Objects, class members, Constructor, Method overloading, Inheritance: forms of inheritance, Method overriding, Visibility Controls.

Unit 5-Packages :

09 hrs

Array – 1D array, declaration, creation and initialization of 1D array, Strings – String methods, Vector – Vector methods, , Defining, Extending and Implementing Interfaces, Definition of a Packages, Java API Packages, Creation, accessing and usage of packages.

Reference Books:

1. Programming with Java- A primer, 4th Edition, by E balaguruswamy.
2. The Complete Reference – Patrick Naughton and Schildt
3. Programming in Java – Joseph L Weber

QUESTION PAPER PATTERN FOR I SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL – JAVA PROGRAMMING LAB

1. Write a Java program to convert the given temperature in Fahrenheit to Celsius and display the values in tabular form.

2. Write a Java program to generate first n odd numbers.

3. Write a java program to find area of circle and rectangle using method overloading.

4. Write a Java program to find the circumference of the circle using interface.

5. Write a java program to sort the alphabets in the given string.

6. Write a Java program to create a vector, add elements at the end, at specified location onto the vector and display the elements. Write an option driven program using switch...case.

7. Write a java program to accept student information using array of objects and constructor initialization.

8. Write a java program to perform matrix addition and multiplication using case statement

9. Write a java program to implement constructor overloading by passing different number of parameter of different types.

10. Write a java program to accept student information to perform relevant computation using single inheritance.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Writing 20 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

SIXTH SEMESTER BA (Computer Applications)

Computer Applications -VII

BAC-6.1 INTERNET PROGRAMMING

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction:

10 hrs

Internet basics, basic concepts, communicating on the internet, internet domain, internet server identities, establishing connectivity on internet, client IP address, Overview of TCP/IP and its services, TCP protocols – WWW,FTP, TELNET.

Unit 2-Introduction to HTML:

10hrs

Information files creation, Web server, web client/browser, HTML tags, structure of HTML program, Text formatting, Text styles, text effects.

Unit 3-Lists:

10hrs

Definition, types - Unordered and ordered list, adding graphics to HTML Documents. Tables – Definition, table tags and attributes. Definition of Link and its attributes, external and internal document references.Images as Hyperlinks.

Unit 4- Frames:

09 hrs

Definition, tags, examples. Cascading Style Sheets (CSS) and its Attributes – font, color and background, text, border, list. Span and Divtags.External Style sheets.

Unit 5: Introduction to Javascript:

09 hrs

Web pafes, Forms, Form validation, Netscape and javascript, Client side javascript, Advantages of javascript, writing javascript into HTML, Basic programming Techniques - Data types and literals, Creating Variables.

References:

1. Web enabled Commercial Application Development using HTML, JAVASCRIPT, DHTML and PHP, by IVAN BAYROSS, 4th Edition, BPB Publication.

QUESTION PAPER PATTERN FOR VI SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL – INTERNET PROGRAMMING LAB

1. Working with web browsers
2. Understanding the working of a web server
3. Home Page Design – Bio Data
4. Home Page Design – College
5. Home Page Design – With Audio Integrated
6. Home Page Design – With Video Integrated
7. Home Page Design – With Audio and Video Integrated
8. Home Page Design – With Animation

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Writing 20 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

SIXTH SEMESTER B.A (Computer Applications)

Computer Applications -VIII

BAC-6.2 SOFTWARE ENGINEERING & COMPUTER NETWORKS

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to Software Engineering: 10 hrs

IEEE definition of Software and Software Engineering, Software Problems, Software engineering challenges, Software quality attributes, phases in software development (Phased Development process), Definition of Software process, Component software process, desired characteristics of software process, Software development process models- waterfall model.

Unit 2- Software design: 09 hrs

Definition of SRS, need for SRS, Characteristics of SRS, Structure of SRS, design principles, module level concepts – coupling and cohesion.

Unit 3- Coding and testing : 09 hrs

Definition of Coding, Programming principles and guidelines, definition of testing, testing fundamentals, levels of testing, Difference between black box testing and white box testing.

Unit 4-Introduction to Computer networksand Network Hardware: 10 hrs

Definition of computer network, Goals of computer network, Types of Networks based on transmission technology - Broadcast, point- to -point, Types of Networks based on size & scale - LAN, WAN, MAN, Protocol hierarchies (Network software), Network topologies – Bus, Mesh, Ring, tree and star.

Unit 5- Network Software, Reference models and Transmission Media: 10 hrs

Reference models - OSI / ISO model, TCP / IP model, Transmission Media - twisted pair, coaxial cable, fiber optics cable, Internet and its applications, Wireless media - Bluetooth, Wi-Fi.

References:

1. An integrated approach to Software Engineering:PankajJalote.
2. Software Engineering a practitioners approach : Roger Pressman.
3. Computer Networks:5th Edition, Andrew S Tanenbau

QUESTION PAPER PATTERN FOR VI SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: PROJECT LAB

PROJECT LAB EXAM SCHEME

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. The project is of 3 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The Project work should be either an individual (one) or a group of not more than five members.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The examiner will evaluate the project work as follows:

- Project Report - 10 Marks
- Project Demo - 10 Marks
- Viva-Voce - 20 Marks



KUVEMPU UNIVERSITY

PHYSICS

THREE YEAR B.Sc., DEGREE COURSE
(Semester Scheme)

TO BE IMPLEMENTED FROM THE YEAR - 2019

Scheme of theory syllabus and Examination

1. Theory 4 hour lectures per week and each practical is 3 hours
2. Theory and practical examination duration is 3 hours

SEMESTER	THEORY			INTERNAL ASSESSMENT (I.A)	PRACTICAL	TOTAL MARKS
	PAPER	PAPER CODE	MAX. MARKS	MAX. MARKS	MAX. MARKS	
I	I	SSA710-A	50	10	40	100
II	II	SSB710-A	50	10	40	100
III	III	SSC710-A	50	10	40	100
IV	IV	SSD710-A	50	10	40	100
V	V	SSE610-A	50	10	40	200
	VI	SSE611-A	50	10	40	
VI	VII	SSF610-A	50	10	40	200
	VIII	SSF611-A	50	10	40	

Question paper Pattern
PAPER: I to VIII semesters (all papers)

Section A

- To be answered in brief.
- Short answer questions.
- Questions are to be set on the concept of the subject.
- Small relevant problems may be included.
- Each question carries 2 Marks.
- 7 questions are to be answered out of 9 questions given.

Section B:

- Long answer type questions –To be answered with detailed explanation, analysis, mathematical derivation etc.,
- Each question carries 4 Marks.
- 6 questions are to be answered out of 8 questions given.

Section C:

- Problems.
- Each problem carries 3 marks – includes both numerical and theoretical problems.
- 4 questions are to be answered out of 6 questions given.

Practical Examination:

Submission of duly certified record book in the examination is compulsory. The candidate who has not submitted the record book is not eligible to take the practical examination.

Maximum Marks for doing Examination	:	30
Maximum Marks for Practical Record Book	:	05
Maximum Marks for Viva-Voce	:	05
Grand total	:	40

FIRST SEMESTER (PAPER-I)

MECHANICS AND PROPERTIES OF MATTER

(4 hours of lecture per week)

60 Hours

1. PLANAR MOTION:

Review of vector algebra, Scalar and Vector product. Derivative of a vector. Review of polar coordinates. Derivative of a vector of constant magnitude (derivation of $\frac{d\vec{A}}{dt} \perp \vec{A}$). Radial and transverse components of velocity and acceleration (meaning and derivation of R and T components) – application to uniform circular motion- centripetal force, areal velocity(derivation), problems.

5 Hrs

2. FRAMES OF REFERENCE:

Concept of frames of reference. Galilean transformations, Galilean principle of relativity (statement and explanation using various examples).

Inertial frames: Newton's laws of motion (statements and their significance). A frame of reference moving with a uniform velocity with respect to an inertial frame is also inertial (Proof).

Non-inertial frames – A frame of reference moving with uniform Acceleration with respect to an inertial frame – a non-inertial frame (proof). Fictitious force – examples. Measurement of acceleration using plumb line (derivation).

Rotating frames of reference - derivation for expression of force. Types of forces in rotating frame. Discussion of the earth as an inertial frame, Foucault pendulum (brief explanation). Conical pendulum – expression for Time period (derivation) w.r.t an inertial (lab) and non inertial (rotating frames). Problems.

11Hrs.

3. SYSTEM OF PARTICLES:

Newton's laws for a system of particles (qualitative)–centre of mass (definition)– External and internal forces. Linear momentum of system of particles, motion of CM, Law of conservation of linear momentum -Rocket motion – expression for instantaneous and final velocities – effect of earth's gravity – multi stage rockets – brief account of Indian rockets.

Angular momentum – Relation between the torque and momentum, theorems on total angular momentum about CM. Law of conservation of angular momentum - examples.

Work done by a variable force: Work – energy theorem(derivation) – conservative force fields, potential energy - conservation of energy, examples – oscillation of a loaded spiral spring Atwood machine (calculation of acceleration using conservation of energy).

Collisions: Elastic and inelastic collisions – elastic head on collision – oblique collision of identical masses in a plane.

Central forces – characteristics of central motion. problems. 13Hrs

4. GRAVITATION:

Newton's law of gravity in vector form. Gravitational potential and field for spherical mass distributions –thin spherical shell and solid sphere (derivation in both case). *Kepler's laws* – statements and derivation, conditions for different orbits, brief account on physics of tides.

Elements of satellite motion – orbital velocity, time period and escape velocity (Brief explanation). geosynchronous orbits, applications of artificial satellites, GPS (in brief).problems. 8Hrs.

5. ROTATIONAL MOTION:

Concept of a rigid body. Moment of inertia-definition and its significance. Equation of motion for rotation motion- K.E of a rotating body (derivation), General Theorems on moment of inertia. (1) perpendicular axes theorem- for plane lamina and for three dimensional body (2) parallel axes theorem (Statement and proof for both).Mention of expression of M I for rectangular plate and circular disc about different axes. Expression for MI of solid cylinder and solid sphere about different axes (derivation).motion of a cylinder rolling down in an inclined plane – expression for velocity and energy(derivation). Theory of compound pendulum –time period, problems. 7 Hrs

6. ELASTISITY:

Stress and strain – elastic limits – Hooke's law – molecular origin –Elastic constants for an isotropic solid, Poisson's ratio- limiting value of Poisson's ratio (for both theoretical and practical), the inter-relation between elastic constants $k = \frac{q}{3(1-2\sigma)}$, $n = \frac{q}{2(1+\sigma)}$, & $q = \frac{9nk}{3(k+n)}$. Work done in stretching and work done in twisting a wire - Torsion of a cylinder –

couple per unit twist derivation, torsional pendulum- frequency expression (derivation).

Theory of Bending moment and Single cantilever, I Section girders -problems. 8 Hrs

7. VISCOSITY:

Streamline and turbulent motion, coefficient of viscosity, critical velocity, Reynold's number, Poiseuille's equation (derivation), Stokes law (derivation from dimensional formula), terminal velocity, factors affecting viscosity of a liquid (qualitative), Applications.Problems.

4 Hrs

8. SURFACE TENSION:

Synclastic and anticlastic surface –Illustration of surface tension with examples, relation between surface tension and surface energy, molecular theory of surface tension. *Excess pressure within a curved surface* (derivation) - application to spherical and cylindrical drops and bubbles. Factors affecting surface tension of a liquid. Applications. Problems.

4Hrs

NOTE : Sufficient numbers of problems are to be worked out in each section which would enhance the understanding of the subject.

REFERENCES:

- 1)Berkeley course in physics – vol I
- 2) Classical mechanics – Takwale.
- 3) Classical mechanics – K.N.SrinivasRao.
- 4) Fundamentals of physics – Halliday, Resnick and Walker- sixth edition.
- 5) Mechanics – D.S.Mathur.
- 6) Properties of matter – D.S.Mathur.
- 7) Newtonian mechanics – A.P. French.
- 8) Physics- vol-1 : Clark

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PRACTICALS –I

(One experiment per week to be conducted in 3 hours duration)

- 1) Bar pendulum – g and k by $h-T$ and h^2-hT^2g graph.
- 2) Spiral spring – force constant, g and unknown mass by graphical method.
- 3) Fly wheel – M.I, mass and density of fly wheel.
- 4) 'q' by Stretching – graphical method.
- 5) 'q' by uniform bending – graphical method.
- 6) Surface tension by capillary rise method.
- 7) Surface tension and angle of contact by Quinke's method.
- 8) Surface tension and interfacial tension by drop weight method.
- 9) Viscosity of water by capillary flow method.
- 10) Viscosity of oil by Stoke's method.
- 11) Specific heat by cooling – graphical method.
- 12) Perpendicular axis theorem using torsion pendulum.
- 13) Bulk modulus of rubber.
- 14) Conservation of energy- using inclined plane.
- 15) Determination of elastic moduli, Poisson's ratio and acceleration due to gravity 'g'.
- 16) To study kinematics of Atwood's machine and hence to determine the value of 'g'

NOTE:

1. Suitable and relevant experiments may be included.
2. Experiments mentioned in I and II semester may be redistributed depending upon the facilities available in the laboratory.
3. Minimum of 8 experiments should be done in each practical.
4. Experiment should be elaborative so as to extend for 3 hours duration.
5. Error estimation may be included for few experiments.

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SECOND SEMESTER (PAPER- II)

HEAT & THERMODYNAMICS, RADIATION, WAVES, OSCILLATIONS & SOUND.

(4 hours of lecture per week)

60 Hours

1. THERMODYNAMICS:

Concept of heat and temperature, Zeroth law and first law of thermodynamics .Brief discussion of isothermal and adiabatic processes, Equation of state of a gas in adiabatic processes (derivation). Relation between P,V and T. Slopes of Isothermal and adiabatics. Relation between Isothermal and adiabatic elasticities.P-V diagram. Carnot cycle: Expression for efficiency (no derivation).

Second law of thermodynamics: Kelvin and Clausius statements. Applications of Second law of Thermodynamics-Refrigerator. Carnot theorem-Statement and proof. Thermo-dynamic scale of temperature. Clausius-Clayperon equation (derivation)- It's application for Melting point and boiling points.

12 Hrs

2. ENTROPY:

Concept of entropy, Change of entropy in reversible and irreversible processes with examples. T-S diagrams-Carnot's cycle. Change in entropy during change of state, entropy disorder, heat death. Entropy and second law of thermodynamics. The applications of entropy.Third law of thermodynamics - statement and brief explanation.

Thermodynamic Potentials: Extensive and intensive thermodynamic variables. Thermo-dynamic Potentials U, H, F and G. Maxwell thermodynamic relation-Their definitions, properties and applications , Derivations and applications - TdS equation

10Hrs

3. KINETIC THEORY OF GASES:

Maxwell's law of distribution of velocities (statement and expression).Expression for mean free path.Degrees of freedom, law of equipartition of energy (statement and derivation) Calculation of value of γ for monoatomic, diatomic and triatomic gases.5Hrs

4. REAL GASES :

Comparison between ideal and real gases, isotherms of a real gas, Vanderwal's equation of state –discussion of correction for pressure and volume, expression for critical temperature, volume and pressure. Liquefaction of gases – porous plug experiment with theory – derivation of expression for temperature of inversion. Principle of adiabatic demagnetization. Joule-Thomson Cooling (using Maxwell relation). 6 hrs

5. *RADIATION*: Distribution of energy in the spectrum of a black body. Wein's displacement law, Wein's law of radiation, Rayleigh- Jeans law. Planck's law of radiation and derivation from the concept of harmonic oscillators – deduction of Wein's law, Wein's displacement law, Rayleigh – Jeans law, and Stefan's law from Planck's law of radiation. Solar constant – temperature of the sun from solar constant. Radiation pressure (definition)

9 Hrs

6. *OSCILLATIONS*:

Review of simple harmonic motion, expression for frequency from the equation $f \propto \sqrt{x}$ (derivation). Equation for damped simple harmonic oscillator. Theory of forced vibrations and resonance – mechanical and electrical examples of resonance. Superposition of SHMs, theory of Lissajous figures. 6Hrs

7. *WAVES*:

Characteristics of wave motion - derivation of general equation of one dimensional progressive wave – differential equation of a wave – complex representation of a wave. Phase of a wave, wave front, expression for intensity of progressive wave (Derivation). Wave groups – phase velocity and group velocity – relation between them. Brief discussion of different types of waves (mechanical waves, seismic waves , water waves and matter waves). 6Hrs

8. *SOUND*:

Velocity of longitudinal waves : 1) in a gas. Newton's formula, derivation. Laplace correction – variation of pressure in a sound wave. 2) Velocity of longitudinal waves in a rod. Theory of

beats.Expression for velocity of transverse waves in a stretched string-derivation. Theory of stationary waves (theory). Doppler Effect- brief explanation.

6 Hrs

NOTE : Sufficient numbers of problems are to be worked out in each section which would enhance the understanding of the subject.

REFERENCES :

- 1) Heat - D.S. Mathur.
- 2) Heat and thermodynamics -Brijlal and Subramanyam.
- 3) Physics volume – I - Halliday and Resnik.
- 4) Berkely course in Physics - volume – I.
- 5) Sound - Khanna and Bedi.
- 6) Refresher course in Physics volume – II - C.L. Arora.
- 7) University Physics – Sears and Zemansky.
- 8) Physics of waves and oscillation - Bajaj.
- 9) Fundamentals of Physics - Halliday and Resnik.
- 10) Heat -G.K.Nokes.
- 11) Treatise on heat – Saha and Srivatsava.**

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PRACTICALS –II

(One experiment per week to be conducted in 3 hours duration)

- 1) q' by Single Cantilever - graphical method.
- 2) ' q ' by Koenig's method - graphical method.
- 3) Torsion pendulum – M.I of irregular body and rigidity modulus.
- 4) Parallel axes theorem – using bar pendulum.
- 5) Static torsion - rigidity modulus - graphical method.
- 6) Frequency of A.C bysonometer - graphical method.
- 7) Helmholtz resonator – Velocity of sound.
- 8) Platinum resistance thermometer- determination of unknown temperature.
- 9) Stefan's – Boltzmann's law – verification using meter bridge.
- 10) Thermal conductivity of a good conductor –Searle's method.
- 11) Thermal conductivity of a bad conductor – Lees and Charlton's method.
- 12) Searle's double bar – q , n , k and Q .
- 13) Interference of sound waves – Quinke's method - Velocity of sound
- 14) ' q ' by cantilever oscillation – graphical method.

NOTE:

1. Suitable and relevant experiments may be included.
2. Experiments mentioned in I and II semester may be redistributed depending upon the facilities available in the laboratory.
3. Minimum of 8 experiments should be done in each practical.
4. Experiment should be elaborative so as to extend for 3 hours duration.
5. Error estimation may be included for few experiments.

THIRD SEMESTER (PAPER- III)

OPTICS AND ELECTROSTATICS

(4 hours of lecture per week)

60 Hours

1. GEOMETRICAL OPTICS:

Optical path, Fermat's principle – statement and explanation. Derivation of Snell's law of refraction using Fermat's principle. Cardinal points: Mention of Gauss sign conventions. Meaning of thick lens. Definition and explanations of cardinal points – focal points, principal points and nodal points and corresponding planes, properties of these points and planes. Combination of two thin converging lenses not in contact as an example of combination of two optical systems. Defects of lenses: Abberations – types, chromatic aberration. Achromatisation of two thin lenses not in contact (derivation). Mention of condition for two thin lenses in contact. Monochromatic aberrations – mention of five types and brief explanation – problems.

8 Hrs

2. OPTICAL INSTRUMENTS:

Eye-pieces, Huygen's and Ramsden's eye-pieces - construction, expression for equivalent focal length (derivation), correction for aberrations, positions of principal and focal planes (no derivation). Comparison.

3 hrs

3. WAVE THEORY OF LIGHT:

Wave front, Huygen's principle, explanation of advance of wave front using concept of the secondary waves. Refractive index in terms of velocity (taking refraction of a spherical wave front at a plane surface). Mention of Experimental confirmation of wave theory. Derivation of lens maker's formula in the case of double convex lens using spherical wave front.

3 Hrs

4. INTERFERENCE OF LIGHT:

Review of Young's double slit experiment, coherent sources, conditions for interference. Biprism - explanation, expression for fringe width. Explanation of measurement of distance between two coherent sources ($d = \sqrt{d_1 d_2}$). Lloyd's mirror –brief explanation, comparison of interference pattern with Biprism. Interference in thin films – reflected system – derivation, transmitted system

(qualitative). Complimentary nature of the two patterns. Interference due to an air wedge- expression for band width (or wavelength) – derivation. Theory of Newton's rings – reflected system, determination of wavelength and refractive index of a liquid- theory, problems.

Michelson's interferometer – construction and working, formation of interference pattern, Conditions for circular, straight fringes, mention of fringes of equal inclination (Haidingers fringes) and thickness. Applications - determination of wavelength λ and difference in wavelength $d\lambda$ - Problems. Interference filters (qualitative).

11 Hrs

5. DIFFRACTION OF LIGHT:

Introduction, Types of diffraction. Fresnel's half period zones, expression for radii- (derivation) – Explanation of rectilinear propagation of light. Zone plate – principle, explanation (qualitative). Expression for focal length (no derivation), comparison of zone plate and convex lens. Fresnel's diffraction at a straight edge – positions of maxima and minima, expressions (derivation), graphical representation of variation of intensity in the diffraction pattern. Diffraction at a straight wire (qualitative). Plane transmission grating – normal and oblique incidence (derivation). Dispersive and resolving power of a grating (qualitative) comparison of grating and prism spectra. Problems.

11 Hrs

6. POLARISATION OF LIGHT:

Double refraction in a uniaxial crystal. Optic axis. Mention of biaxial crystals. Principal refractive indices – Huygen's construction for O and E wave fronts in the case of optic axis in the plane of incidence and parallel to crystal surface – oblique and normal incidence (in detail). Retarding plates – production with theory, derivation of general equation for an ellipse and discussion of different cases, expression for the thickness of quarter and half wave plates (mention) – problems. Production and detection of linearly, circularly and elliptically polarized light, (qualitative explanation). Optical activity- Fresnel's theory. Kerr and Faraday Effect (brief explanation and comparison).

8 Hrs

ELECTROSTATICS:

7. SCALAR AND VECTOR FIELDS:

Concept of scalar and vector fields: Del operator – gradient of scalar function – physical significance. Divergence and curl of a vector function - physical significance with examples, problems. Laplacian

operator-line, surface and volume integrals of a vector function, examples. Gauss divergence theorem, Stokes theorem and their physical meaning (no derivation). Proof of $\text{curl grad } \phi = 0$ and $\text{div curl } A = 0$.

4 Hrs

8. ELECTRIC FIELD AND POTENTIAL : Electrostatic field, electric flux, expression for flux, Gauss theorem in electrostatics, (both differential and integral form). Application to deduce the expression for the field near a) charged conductor and force per unit area of its surface (derivation of both). Coulomb's law from Gauss law (derivation) – equivalence of two laws.

The Electric Potential: *Concept of electric potential*, Electric field as the negative gradient of potential. Proof of $E = -\text{grad } V$. (*from $d\phi = \nabla\phi \cdot dr$ and $E \cdot dr = -dV$*). Mention of Poisson and Laplace equations, uniqueness theorem (statement).

Work and Energy in Electrostatics: Potential energy. The energy of a continuous charge distribution. (no derivation). Energy density in an electrostatic field, derivation from the example of a parallel plate capacitor. Loss of energy due to sharing of charges between two conductors (derivation by taking a capacitor).

5 Hrs

9.ELECTRIC DIPOLE:

Dielectric Materials: Basic terms, types of polarization in Dielectric Materials . Equation for Potential and field due to a dipole in polar coordinates(derivation). Lorentz local field (derivation) Relation between D and P. $D = \epsilon_0 E + P$. (derivation from parallel sided slab in an electric field). Definition and meaning of dielectric susceptibility. Brief account of para and ferro electric materials. Clausius – mossotti equation (no derivation). Concept of electrical images- Application to a point charge near the surface of a conducting plane (equation for \vec{E} derivation).

7 Hrs

REFERENCES:

- 1) Optics- Brijlal and Subramayam
- 2) Optics and Atomic physics – D.P Khandelwal.
- 3) Optics and Atomic physics – Satya prakash
- 4) Electricity and Magnetism – K.K. Tiwari
- 5) Physics Volume II – Halliday and Resnick

- 6) Optics – R. Murughesan
- 7) Electricity and Magnetism - Brijlal and Subramayam
- 8) Optics – Ajoy Ghatak
- 9) Fundamentals of Physics – Jenkins and White
- 10) Electricity and Magnetism – D.N Vasudeva
- 11) Berkely Physics course – Volume –II

PRACTICALS –III

(One experiment per week to be conducted in 3 hours duration)

- 1) Interference at an air wedge – determination of thickness.
- 2) Newton's rings – determination of radius of curvature.
- 3) Bi-prism – determination of wavelength.
- 4) Diffraction at a straight wire - determination of diameter.
- 5) Diffraction grating – minimum deviation method- mercury spectrum.
- 6) Polari meter – Specific rotation of sugar.
- 7) Resolving power of a telescope.
- 8) Resolving power of a grating.
- 9) Diffraction at a straight edge - determination of wavelength.
- 10) L-B photometer – inverse square law & absorption coefficient of glass plate.
- 11) Charging and discharging of a capacitor- calculation of energy dissipation.
- 12) de-Sauty's bridge – verification of law combination of capacitances.
- 13) Impedance of series R-C circuit - determination of frequency of A.C graphical method.

NOTE:

1. Suitable and relevant experiments may be included.
2. Experiments mentioned in III and IV semester may be redistributed depending upon the facilities available in the laboratory.
3. Minimum of 8 experiments should be done in each practical.
4. Experiment should be elaborative so as to extend for 3 hours duration.
5. Error estimation may be included for few experiments.

IV SEMESTER (PAPER IV)

ELECTRICITY AND ELECTROMAGNETIC THEORY

(4 hours of lecture per week)

60 Hours

1. TRANSIENT CURRENTS:

Growth and decay of current in a series L-R circuit fed with direct emf. Derivation of expression for current in (growth – decay) – graphical representation, explanation of time constant.

Charging and discharging of a capacitor through a resistance – derivation of expression for charge variation in a R-C circuit, mention of expression for voltage and current variation – explanation of time constant in each case.

Series L-C-R circuit fed with direct emf – qualitative discussion- mention of expression for transient charge, condition for oscillation and expression for frequency(no derivation), Problems.

6Hrs

2. ALTERNATING CURRENTS:

Types of AC (sinusoidal and non-sinusoidal) – derivation of expression for mean and RMS values of sinusoidal AC and relation between them. Complex representation of AC using j- operator, phase factor ($\omega t - \theta$). Response of LR, CR and LCR circuits fed with alternating emf – derivation of expressions for current and impedance (using j- notation), phase relation between current and applied emf.

Series resonance – discussion from the expression for current , explanation of half power frequency, band width and quality factor, expression for quality factor in terms of f_1 , f_2 and f_r (derivation), significance of Q – factor, effect of resistance, frequency and quality factor. Voltage magnification.

Parallel resonance (LR in parallel with C) expression for current and impedance (no derivation), current magnification. Comparison between series and parallel resonance. Power in an AC circuit- derivation of expression for average power, power factor and its significance. Skin effect (qualitative). Comparison of A C and D C w.r.t characteristics and applications. Problems.

12Hrs

3. NETWORK ANALYSIS:

Mesh current method of circuit analysis. Thevenin's and Norton's theorems – DC and AC statements (proof for DC circuit) – explanation using DC circuits, problems involving both DC and AC circuits.

Maximum power transfer theorem – AC and DC statements, proof for DC circuit, and problems with DC circuits. Problems

7 Hrs

4. FREQUENCY FILTERS:

Types of filters– derivation of expression for cut-off frequency in case of High pass and low pass RC filters. Band pass and band stop filters (qualitative). Application of frequency filters(mention). 2 Hrs

5. RECTIFIERS: Review of rectifiers, Role of filters in rectifiers – C,L and π section filters(qualitative). Zener diode- construction and working – V-I characteristics- zener breakdown voltage. Regulated power supply -Construction and working using zener diode-voltage regulation in case of a) input voltage variation (in detail) and b) load variation (qualitative). Bleeder resistance –action.Problems.

5Hrs

6. ELECTRICAL MEASUREMENTS:

Ballistic Galvanometer – construction and theory of B.G. Charge sensitivity – origin of damping and damping correction. Logarithmic decrement, expression for decrement (derivation). Applications of BG.

Theory of Anderson's and de Sauty's bridges.

Cathode ray oscilloscope – construction of CR tube – block diagram of CRO- brief explanation of function of each block.Time – base with simple circuit – uses of CRO.Measurement of voltage and frequency (using time base and Lissajous figures).Watt meter – watt hour meter (brief explanation).

8Hrs

7. ELECTROMAGNETISM:

Explanation of magnetic field as that produces force on a moving charge – distinction between B and H – Lorentz force on a charge in an EM field, mention of expression $F = q (E + V \times B)$ and its explanation. Origin of induced emf in a conducting rod moving in a magnetic field (from force on charged particles).

Ampere's circuital law – statement – proof from line integral over an irregular path which encloses current -comparison of Gauss's law and Ampere's law – application of Ampere's law to calculate magnetic fields due to (a) a straight long conductor (b) a long solenoid. Characteristics of magnetic field- Div B = 0 (qualitative)- concept of magnetic vector potential (brief). Current loop as a magnetic dipole, illustration from the magnetic loop due to a circular current loop- expression for torque on a magnetic dipole in a magnetic field.

9Hrs

8. MAXWELL'S FIELD EQUATIONS:

Deduction of equations from empirical laws of Gauss, Faraday and Ampere.Limitations of Ampere's law, Maxwell's concept of displacement current, derivation of expression for displacement current density from charging of a capacitor – significance of displacement current.

Derivations of EM wave equation(for E and B) for free space, velocity of EM waves, light as an EM wave, EM wave equation for dielectric medium, expression for refractive index. Plane wave solutions of EM wave equation in free space –characteristics of EM waves, transverse nature of EM waves

(derivation), relation between E and B components(qualitative)- to show that E and B are perpendicular to each other- diagram of a plane Polarized EM wave. Poynting theorem, Poynting vector, significance of Poynting vector. Propagation of EM waves in isotropic and dielectric media.

11Hrs

NOTE : Sufficient numbers of problems are to be worked out in each section which would enhance the understanding of the subject.

REFERENCES:

- 1) Introduction to Electrodynamics – David J Griffiths.
- 2) Electricity and magnetism – Mahajan A.S and Rangwala.
- 3) Electricity and magnetism – Berkeley physics course Vol II.
- 4) Fundamentals of physics – Halliday, Resnick and Walker- sixth edition.
- 5) Electrodynamics – Jackson.
- 6) Electromagnetism – B.B. Laud.
- 7) Fundamentals of Electricity and magnetism – D.N Vasudeva.
- 8) Electricity and magnetism – Brijlal and Subramanyam.
- 9) Feynman lectures – vol II.
- 10) Electricity and magnetism – K.K.Tiwari.
- 11) Fundamentals of Electricity and magnetism – Arthur F Kip.
- 12) Electricity and magnetism –R. Murugheshan.
- 13) Text book of Electronics -Basavaraj.B.
- 14) Basic electronics–Thereja.
- 15) Text book of electrical technology – B.L.Thereja.

PRACTICALS – IV

(One experiment per week to be conducted in 3 hours duration)

- 1) Series resonance.
- 2) Parallel resonance.
- 3) Self-inductance – Anderson's bridge.
- 4) Dielectric constant – RC circuit.
- 5) Low pass and high pass filters – cut-off frequency.
- 6) Helmholtz tangent galvanometer- Reduction factor 'K' and BH
- 7) Field on the axis of a circular coil – both sides.
- 8) Network theorems–Maximum power transfer, Thevenin's & Norton's theorems.
- 9) Half wave rectifiers- without & with filters
- 10) Full wave rectifiers- without & with filters. (using two diode)
- 11) Current sensitivity of BG.
- 12) Diffraction grating – normal incidence.
- 13) Cauchy's constants – graphical method & direct calculation for two wavelengths.
- 14) Lloyd's mirror – determination of wavelength.
- 15) Cornu's fringes – elastic constants.
- 16) Thermo emf of a thermocouple using potentiometer – melting point.
- 17) Measurement of L and C by equal voltage method.

NOTE:

1. Suitable and relevant experiments may be included.
2. Experiments mentioned in III and IV semester may be redistributed depending upon the facilities available in the laboratory.
3. Minimum of 8 experiments should be done in each practical.
4. Experiment should be elaborative so as to extend for 3 hours duration.
5. Error estimation may be included for few experiments.

FIFTH SEMESTER (PAPER-V)

ATOMIC PHYSICS, SPECTROSCOPY, LASERS AND ASTROPHYSICS

4 hours of lecture per week

60 Hours

1. ELECTRON:

- i) Properties of electron, e/m of electron by Thomson's method, Charge of an electron by Millikan's oil drop experiment.

4 Hrs

2. ATOMIC STRUCTURE:

- i) Different types of atomic model- Thomson's atomic model, Rutherford's atomic model, Bohr's atomic models and Sommerfeld's atomic model. (Qualitative explanation of salient features of four model success and limitations - explanation)
- ii) Mention the expression for radius of the orbit, energy of the electron in various orbits, wave number and Rydberg constant according to the Bohr's model (no derivation). - explain with more emphasis on the wavelengths of atomic spectra and Rydberg constant value.
- iii) Effect of finite mass of the nucleus on atomic spectra (with derivation).
- iv) Ratio of masses of electron and proton- using Rydberg constant.

5

Hrs

3. VECTOR ATOM MODEL:

- i) Postulates of vector atom model- a) Space quantization b) Spinning of electron. Detailed discussion of space quantization and spinning of electron.
- ii) Stern and Gerlach experiment – Principle, theory and experimental study.
- iii) Relation between orbital magnetic momentum and the orbital angular momentum of an electron (derivation). Expression for Bohr magneton.
- iv) Spin magnetic moment of an electron (qualitative discussion only).
- v) Quantum numbers associated with vector atom model (brief explanation of each).
- vi) Pauli's exclusion principle- Statement, explanation and its significance.
- vii) Maximum number of electrons in a sub shell (orbital) and in a shell (orbital)- expression, derivation using Pauli's exclusion principle.
- viii) Spin-orbit coupling: Types L-S coupling and $j - j$ coupling. Brief explanation of each and figure.

9 Hrs

4. OPTICAL SPECTRA:

- i) Spectral terms, spectral notations (both single electron atom and many electron atoms).
- ii) Selection rules and intensity rules for the spectral lines.

- iii) Fine structure of spectral lines- Explanation, discuss by taking Sodium D lines as example.
- iv) Zeeman effect-Types of Zeeman Effect, experimental study of Zeeman Effect. Larmor precession- Statement and explanation. Quantum mechanical explanation of normal Zeeman Effect- expression for Zeeman Shift. Quantum mechanical explanation of anomalous Zeeman Effect- Expression for Lande 'g' factor.
- v) Paschen–Back effect and Stark effect (qualitative only)

9 Hrs

5. MOLECULAR SPECTRA:

- i) Different regions of molecular spectra- origin of molecular spectra.
- ii) Pure rotational spectra of diatomic molecules- theory, expression for rotational constant.
- iii) Vibrational spectra of a diatomic molecule.
- iv) Vibrational – rotational spectra of a diatomic molecule (qualitative explanation).
- v) Electronic spectra (qualitative).
- vi) NMR and ESR – principle and applications.

7 Hrs

- #### 6. SCATTERING OF LIGHT: Coherent and incoherent scattering (brief explanation). Rayleigh scattering (brief explanation). Blue colour of the sky (Reasoning). Raman Effect – Raman spectra, Raman lines- Stoke's and antistoke's lines. Experimental study of Raman Effect. Quantum theory of Raman Effect. Characteristic properties of Raman lines, intensity and polarization of the Raman lines – depolarization factor. Application of the Raman Effect (qualitative).

6 Hrs

- #### 7. LASERS: Spontaneous and stimulated emissions. Einstein's coefficients (no derivation). Laser action—condition for laser action, active medium, population inversion, pumping – different methods of pumping. Characteristics of laser light. Ruby and He-Ne lasers – construction, working and energy level diagrams. Semiconductor laser – construction and working. Applications of lasers in Communication – OFC, Scientific research, industries, medicine, military operations and computers (explain all application in brief). HOLOGRAPHY: Hologram – principle of recording and reconstruction, properties and applications of hologram. 8Hrs

- #### 8. ASTROPHYSICS: Stars – Distance of a star – stellar parallax method, units of astronomical distances- AU, Ly, Parsec and their relations. Luminosity, brightness of a star and their relations. Magnitude of a star-apparent and absolute magnitude of a star-Relation between them. Spectral classification of stars (as per different surface temperature). H-R diagram- explanation about the diagram. Calculation of mass, mean density, radius and temperature of sun. Derivation of the expression for internal

temperature of a star. Expression for Internal pressure of a star (no derivation). Photon diffusion time- explanation. Mass-Luminosity relation for a star (derivation) and explanation. The relation between life time of a star and it's mass. Sources of stellar energy (qualitative).

Evolution of stars – conditions for main sequence star, red giants, white dwarfs and neutron stars and black holes.

9 Hrs

9. COSMOLOGY: Expansion of universe, Hubble's law-statement and explanation, Age of the universe using Hubble's law. Big Bang theory-explanation, experimental evidence for Big Bang model- CMBR, Nucleo synthesis(qualitative).

3 Hrs

FIFTH SEMESTER (PAPER-VI)

GENERAL & SPECIAL THEORY OF RELATIVITY, STATISTICAL MECHANICS,

QUANTUM MECHANICS, NANO PHYSICS.

(4 hours of lecture per week)

60 Hours

1. SPECIAL THEORY OF RELATIVITY:

Concept of Newtonian mechanics, space, time, mass, frame of reference, Newtonian relativity, Galilean concept, Galilean transformation equations,.Relativity concept of physical quantities.Ether hypothesis, Michelson – Morley experiment – experimental setup, principle, equation for path difference (no derivation), significance of null result of experiment, (absoluteness of velocity of light), postulates of Einstein special theory of relativity.Lorentz – transformation equations (no derivation).Length contraction, time dilation, Relativity of simultaneity, velocity addition theorem (simple derivation).

Relativistic dynamics: Mass variation (no derivation), mass – energy relation (derivation), relativistic expression for kinetic energy,energy - momentum relation. Classical and relativistic concepts of space and time, Minkowski's world, concept of four vectors, $(xyz, \sqrt{-1} ct)$, world line, space-time interval and its invariance.

15 Hrs

2.GENERAL THEORY OF RELATIVITY:

Inertial and gravitational mass, principle of equivalence, curved space time, Einstein theory of gravitation (brief).Experimental verification of general theory of relativity- brief explanation of effect of gravitational field: on a ray of light, on path of a planet about the sun and relativistic Doppler effect.

5 Hrs

3. QUANTUM MECHANICS:

Wave particle duality, de Broglie concept of matter wave, de Broglie wavelength, group velocity and phase velocity of de-Broglie waves, characteristics of matter waves, Davisson – Germer experiment- experimental set up and procedure (derivation).

Heisenberg uncertainty principle – physical significance – non-existence of electrons in the nucleus – radius of Bohr' orbits – γ ray Microscope experiment – wave function, physical significance, Born interpretation of wave function.Basic postulates of wave mechanics

(statement and brief explanation). Quantum mechanical operators – position, energy, linear momentum and angular momentum. Commutator of position and momentum operators.

Time Independent and Time Dependent Schrodinger wave equations (both derivations)– Normalization – properties, Eigen values, – Eigen functions. Application of Schrodinger Time Independent wave equation – Free particle in one dimensional potential box (Derivation for E_n and Ψ_n), zero point energy. Three Dimensional potential box (Qualitative). Simple harmonic oscillator and hydrogen atom - Eigen energy and functions (brief discussion)

Problems

20 Hrs

4. STATISTICAL MECHANICS:

Necessity of statistical approach, microscopic and macroscopic states, ensembles, probability, thermodynamic probability, phase-space, fundamental postulates of statistical mechanics, , equilibrium state, density of states. Types of statistical laws – distinguishing features of three statistical systems with examples. Classical statistics- M-B statistical distribution function(no derivation). Quantum statistics: F-D and B-E statistical distribution functions (both derivation). Comparison of MB-BE-FD statistics. Energy density Vs frequency graph of Black body radiation (brief explanation) -derivation of Planck's law from B-E statistics.

10 Hrs

5. NANO PHYSICS:

Concept of Nanotechnology, material science, Nanotechnology, nano structural materials, graphite. Properties of nanomaterial : mechanical, chemical, magnetic, - applications. Fullerenes (carbon- 60), carbon nanotubes - production by air discharge method, properties. Nano electronics;- semiconductor structures, quantum wells, quantum wires, quantum dots, quantum computers, applications. Nano medicines (brief explanation)

7 Hrs

6. LIQUID CRYSTALS: Classification, properties and applications.

2 Hrs

NOTE : Sufficient numbers of problems are to be worked out in each section which would enhance the understanding of the subject.

REFERENCES:

- 1) Modern physics – R.Murugheshan and KiruthigaPrasath.
- 2) Berkeley physics course – Vol 3, 4 and 5.
- 3) Theory of space, time and gravitation- S.G.Pimpale.
- 4) Special theory of relativity – Resnick.
- 5) Lasers and Non-linear optics – B.B.Laud.
- 6) Lasers – Tyagarajan and Ghatak.
- 7) Quantum mechanics – Arul das.
- 8) Introductory quantum mechanics – Y.R.Waghmare.
- 9) Fundamentals of physics – Halliday, Resnick and Walker- sixth edition.

V SEMESTER

PRACTICAL – V

(One experiment per week to be conducted in 3 hours duration)

1. e/m of an electron –Thomson Method –graphical calculation
2. Capacity of condenser using B.G –graph of deflection Vs voltage
3. LCR circuit –measurement of frequency voltage and phase difference using CRO
4. Full wave bridge rectifier –display of waveform, ripple factor, with and without filter.

Graph I_{dc} Vs V_{dc}

5. Hysteresis curve (B-H loop) for a ferromagnetic substance
6. Absorption spectrum of KMnO_4 – Determination of wavelength λ
7. G.M Counter –Characteristics $(N \pm \sqrt{N})$ Vs V_s graph.-Operating Voltage.
8. LASER –wavelength and particle size by diffraction grating
9. Thermionic emission- determination of work function.
10. Triode characteristics – anode and mutual characteristics – Determination of

r_p, g_m and μ

NOTE:

- 1) Suitable and relevant experiments may be included.
- 2) Experiments mentioned in V and VI semester may be redistributed depending upon the facilities available in the laboratory.
- 3) Minimum of 8 experiments should be done in each practical.
- 4) Experiment should be elaborative so as to extend for 3 hours duration
- 5) Error estimation may be included for few experiments.

V SEMESTER

PRACTICAL – VI

(One experiment per week to be conducted in 3 hours duration)

1. Thermionic emission- determination of work function.
2. Determination of Planck's constant and work function using photo tube.
3. High resistance by leakage –graphical and direct method - correction for leakage resistance of capacitor.
4. Dielectric constant using R C circuit.
5. Verification of Malu's law using Laser light.
6. Lissajousfigures-Determination of unknown frequency.
7. G M Counter – Nuclear counting Statistics.
8. Verification of probability theorems using 1,2 and 10 coins.
9. LDR- absorption coefficient of glass using laser or ordinary light.
10. Solar cell characteristics.
11. Zener diode as voltage regulator (input voltage and load resistance variation)

NOTE:

1. Suitable and relevant experiments may be included.
2. Experiments mentioned in V and VI semester may be redistributed depending upon the facilities available in the laboratory.
3. Minimum of 8 experiments should be done in each practical.
4. Experiment should be elaborative so as to extend for 3 hours duration.
5. Error estimation may be included for few experiments.

SIXTH SEMESTER (PAPER-VII)

SOLID STATE PHYSICS AND ELECTRONICS

(4 Hours Of Lecture Per Week)

60

Hours

1. Crystallography: Introduction, crystal lattice and translation vectors, unit cell, Bravais lattice. Types of lattice – 2-D and 3-D lattice. Lattice directions and planes. Miller indices- Bravais lattice in 3D- crystal systems, inter planar spacing- relation with (h,k,l) and intercepts.

Symmetry operations- brief discussion, concept of point and space group.

X-rays- introduction, Production-brief explanation, Types of X-rays-soft and hard –X-rays (mention).

Scattering Of X-Rays: Laue's work. Bragg's law of diffraction, derivation of $2d\sin\theta = n\lambda$.

Compton Scattering: Explanation, equation for Compton shift (derivation) – discussion of different cases, comparison of Raman effect and Compton effect.

X-Ray Spectra: Continuous spectra- λV vs I graph and V vs v_{\max} graph, origin due to inverse photo electric effect-Duane-Hunt empirical law.

Characteristic spectrum- Origin due to electronic transition.(K,L,M,N shell diagram) Mosley's law, explanation using Bohr's theory. Significance of Mosley's law- arrangement of periodic table, determination of atomic number and position of an element (mention).

10 Hrs

2. SPECIFIC HEAT OF SOLIDS: Dulong and Petit's law – statement and derivation from classical theory.- Einstein's theory – assumption, equation for specific heat capacity (no derivation), merits and demerits. Debye's theory: Assumption- derivation of Debye's formula, application to (i) High temperature- agrees to Dulong-Petit's law, (ii) Low temperature – Debye's T^3 law, problems.

4 Hrs

3. FREE ELECTRON THEORY OF METALS: Limitations of classical theory, Quantum Free Electron Theory of Metals- Sommerfeld's model- assumptions, energy state of free electrons in metal – obey F-D Statistics and Pauli's principle. Density of states, derivation of expression for Fermi energy, - Average energy at absolute zero, $E_0 = 3/5 E_f(0)$, mention of Fermi velocity and Fermi temperature.-application to electrical conductivity- qualitative explanation- collision time τ as a function of E_f , mention of equation $\sigma = \frac{ne^2\tau(E_f)}{m}$.

6 Hrs

4. Band theory of solids: Brief review of concept of energy bands and classification of solids.

Semiconductors: Intrinsic semiconductor – equation for concentration of charge carriers in valence band and conduction band (for n and p - derivation).

Law of mass action- $np = n_i^2 = AT^3 e^{-E_g/kT}$. Equation for Fermi level. Fermi level lies at the centre of forbidden gap. Statement and derivation of equation for electrical conductivity. $\sigma = |e|n(\mu_n + \mu_p)$.

Extrinsic semiconductor : P and N type – explanation using energy bands – diagram, formation of acceptor and donor levels (acceptor level in p type and donor level in n type), equation for Fermi level- derivation in both cases (E_F for n & p), temperature dependence of Fermi level. Equation for electrical conductivity. $\sigma_n = e N_d \mu_n$, $\sigma_p = e N_a \mu_p$ - brief explanation.

Hall Effect: Theory- expression for hall voltage and hall coefficient, relation between R_H and μ .

Mention of applications.

9 Hrs

5. MAGNETIC PROPERTIES OF MATERIALS: Dia-, Para-, Ferri- and Ferromagnetic Materials. - Origin of dia, para and ferromagnetism on the basis of electronic structure of atoms. Variation of susceptibility with temperature. Classical Langevin's theory of dia – and Paramagnetic Domains.

Ferromagnetism- Weiss theory of Ferromagnetism and hysteresis. Domains- origin and effect due to magnetism, hysteresis- explanation, significance of hysteresis loss, application of ferromagnetic materials.

5 Hrs

4. SUPERCONDUCTIVITY: Experimental observations – Transition temperature, persistent current, Isotope effect, Meissner effect. – Principle of magnetic levitation. (Qualitative)

Effect of magnetic field on super conductor - (M Vs H graph) – critical field. Type-I and Type-II super conductors - mention of application.

Theory of super conductivity: BCS theory – qualitative explanation – concept of phonon field in a lattice, formation of cooper pair, exchange of phonons. Brief explanation of energy gap due to super conductivity

High temperature superconductors - Recent advances, Applications. (1) construction of electromagnets, (2) transmission of electric power (super conducting cables), (3) magnetic shielding.

5 Hrs

5.SOLID STATE ELECTRONICS:

Transistors: Different configurations, biasing- self biasing of CE circuit – voltage divider method – circuit operation, input and output equations.

Hybrid parameters- Definition for a linear circuit- notation, equations and equivalent circuit for CE configuration.

Transistor as an amplifier in CE mode- practical circuit of single stage CE amplifier- circuit operation, DC load line, Q-point, AC load line. Derivation of expression for Z_i , A_v , A_i and A_p in terms of h-parameters, approximation. Frequency curve response and band width.

Oscillators: Basic LC oscillatory circuit - damped and undamped oscillations. Feedback amplifier, positive and negative feedback, comparison (with respect to gain, stability and band width), Barkhausen's criterion for sustained oscillation - Explanation using the equation $A_F = A/(1 - A_m)$. Phase-shift oscillator- Circuit diagram, principle, circuit operation, equation for o/p frequency (no derivation), advantages.

Multivibrators- distinguishing features of different types, (Mono, Bi and Astable), uses of multivibrators. Astable multivibrators – transistorized circuit, circuit operation, waveform, switching time and frequency of oscillation (No derivation).

Integrated circuits: Types of Integrated circuits (brief) and their advantages and disadvantages (comparison with discrete components with respect to size, power consumption and reliability)

Field effect transistor: Types (mention). JFET-construction of N-channel JFET, principle of working (qualitative), common source configuration – circuit diagram, characteristics (drain and mutual), definition of r_d , g_m and μ . Application of FET (Mention). Comparison with BJT.

Operational amplifier: Symbol, Characteristics of an Ideal and Practical Op-Amp (IC 741), Open-loop & Closed-loop Gain. (mention of R_i , R_o , A_v , Band width, CMRR). Concept of Virtual ground, Applications of Op-Amps: (1) Inverting and Non-inverting Amplifiers, equation for gain (derivation - inverting and non-inverting cases), Frequency response and band width. (2) Adder-half and full adder (3) Subtractor, (4) Differentiator, (5) Integrator. (BRIEF EXPLANATION OF EACH)

13 hrs

6.Digital Electronics: Brief review of logic gates. Realization of basic gates using NAND and NOR gates. EX-OR gate – symbol, truth table. Mention of IC gates (Ex : 7400 and 7402).

Boolean algebra: Basic laws (statement) De-Morgan's theorem –statement and brief explanation. Boolean expressions –simple equations and their realization using gates- problems on writing logic diagrams, logic equations, truth table and simplification of equation.

Flip-Flops: Basic principle of Flip-Flop circuits. RS Flip-Flop –symbol, brief explanation using logic diagram and truth table, draw backs. Clocked RS flip-flop (principle only) truth table. J-K flip-flop s in detail. M/S J-K flip flop (brief discussion), brief discussion of registers and counters

5 Hrs

7. Communication: Radio communication: Modulation: Review of principle, frequency spectrum of AM. Equation for AM modulation (no derivation) – Current and power calculation. FM Modulation –Principle (brief). Comparison of AM and FM modulation, AM transmitter- block diagram, explanation. AM receiver- Super Heterodyne Receiver- block diagram, explanation, characteristics of radio receiver, sensitivity, selectivity, and fidelity (brief). Advantages of SHR.

5 Hrs

Note: Sufficient numbers of problems are to be worked out in each section which would enhance the Understanding of the subject.

Sixth Semester

Paper VIII: Nuclear and particle physics

(4 hours of lecture per week)

60

hours

- 1. General Properties of Nuclei:** Constituents of nucleus and their Intrinsic properties, quantitative facts about size, mass, charge density (matter energy), binding energy, average binding energy and its variation with mass number, main features of binding energy versus mass number curve, N/A plot, angular momentum, parity, magnetic moment, electric moments, nuclear excited states.

5 hrs
- 2. Radioactivity:** stability of nucleus; Law of radioactive decay; Mean life & half-life; Law of successive disintegration- radioactive equilibrium – Transient and Secular equilibrium. Radioactive dating. (a) Age of earth, (b) Age of rock Carbon dating (c) Estimate the age of wood and Problems.

5 Hrs
- 3. Radioactivity decay:**(a) Alpha decay: basics of α -decay processes, theory of α -emission, Gamow theory(Qualitative) Geiger- Nuttall law, (b)Beta β -decay: energy kinematics for β -decay, positron emission, electron capture, neutrino hypothesis. (c) Gamma decay: Gamma rays emission & kinematics, internal conversion. Mossbauer effect. (in brief)

6 Hrs
- 4. Detector for Nuclear Radiations: Classification of detectors. Gas detectors:** GM Counter. (in detail).Scintillation counter- Basic principle of Scintillation. Detectors and construction of photo-multiplier tube (PMT). Semiconductor Detectors: HpGe detector (in Brief)

5 Hrs
- 5. Particle Accelerators:** Accelerator facility available in India: Van-de Graff generator (Tandem accelerator), Linear accelerator (qualitative) Cyclotron and Betatron (in detail) Standard Model of Particle physics, Brief Discussion of LHC and LIGO.

5 Hrs
- 6. Nuclear Reactions: Types of Reactions, Conservation Laws, kinematics of reactions, Q-value, reaction rate, reaction cross section, Concept of compound and direct reaction, resonance reaction.** Artificial radioactivity- artificial transmutation.

5Hrs
- 7. Nuclear forces and models :**
Nuclear force: Characteristics of nuclear forces, Meson theory of nuclear forces.

Nuclear models: Liquid drop model approach, semi empirical mass formula and significance of various terms, condition of nuclear stability. Shell model- basic assumption of shell model, Evidence for nuclear shell structure, nuclear magic numbers.

5 Hrs

- 8. Fission and fusion** - Types of fission – distribution of fission fragments – liberation of neutrons. Fissile and fertile materials. Nuclear reactor: classification, power reactor (in Detail), Four factor formula (Derivation)
Nuclear fusion –thermonuclear reactions – sources of stellar energy. p-p chain reaction, CNO chain reactions.

5 Hrs

- 9. Interaction of Nuclear Radiation with matter:**Energy loss due to heavy charged particles and electrons passing through matter, Cerenkov radiation, Gamma ray interaction through matter, photoelectric effect, Compton scattering, pair production, neutron interaction with matter.(qualitative)

5 Hrs

- 10. Particle physics:** classification of elementary particles and types of interactions , basic features. Symmetries and Conservation Laws: energy and momentum, angular momentum, parity baryon number, Lepton number, Isospin, Strangeness and charm, concept of quark model, color quantum number and gluons.

6 hrs

- 11. Cosmic Rays:** Discovery, primary and secondary cosmic rays. Altitude, latitude effect, east – west asymmetry. Cosmic ray showers – Bhabha's theory. Origin of cosmic rays.

3 hrs.

- 12. Renewable energy sources:** : Introduction to energy sources, primary energy sources, secondary energy sources, supplementary source.

Solar energy: Solar energy and its importance, storage of solar energy, solar pond, non convective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning.

Wind Energy harvesting: Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies.

5 Hrs

VI SEMESTER

PRACTICAL – VII

(One experiment per week to be conducted in 3 hours duration)

1. FET characteristics – drain and transfer characteristics, determination of r_p , g_m and μ
2. CE amplifier – frequency response, band width and gain band width.
3. OP – AMP: – using IC 741 – inverting amplifier, frequency response, gain calculation for different feedback resistances, - band width and gain band width.
4. Logic gates: Construction and study of AND, OR, NAND, and NOR gates using IC7400
5. Astable multivibrator –using transistor –determination of output frequency and duty cycle.
6. Determination of h-parameter for CE – mode.
7. Phase shift oscillator –using transistor or IC.
8. G.M counter – Verification of inverse square law.
9. Earth inductor –determination of B_H and B_V .
10. RS Flip Flop: Construction using IC and verification of truth table. Demonstration of action of clocked pulse.
11. Rydberg constant – By hydrogen discharge tube or solar hydrogen spectrum
12. Photo tube –Verification of inverse square law of radiation.
13. Frank-Hertz Experiment.

NOTE:

6. Suitable and relevant experiments may be included.
7. Experiments mentioned in V and VI semester may be redistributed depending upon the facilities available in the laboratory.
8. Minimum of 8 experiments should be done in each practical.
9. Experiment should be elaborative so as to extend for 3 hours duration.
10. Error estimation may be included for few experiments.

VI SEMESTER

PRACTICAL – VIII

(One experiment per week to be conducted in 3 hours duration)

1. Transistor characteristics.
2. OP – AMP – using IC 741 – non - inverting amplifier, frequency response, gain calculation for different feedback resistances, - band width and gain band width.
3. OP AMP: Filter circuits.
4. Logic gates: Construction and study of AND, OR, NAND, and NOR gates using IC 7402
5. Astablemultivibrator: - using IC -555 – determination of output frequency and duty cycle.
6. Energy gap of semiconductor using meter bridge- determination of unknown temperature (melting point of wax) by graph.
7. Mutual inductance by absolute method using B.G.
8. G.M counter – Absorption coefficient of aluminum.
9. Hall Effect: Measurement of Hall co – efficient.
10. AM – Modulator and demodulator –construction using transistor or IC –measuring depth of modulation.
11. Determination of Fermi energy of copper using meter bridge.
12. FET Amplifier – Common source – frequency response, band width and gain bandwidth

NOTE:

1. Suitable and relevant experiments may be included.
2. Experiments mentioned in V and VI semester may be redistributed depending upon the facilities available in the laboratory.
3. Minimum of 8 experiments should be done in each practical.
4. Experiment should be elaborative so as to extend for 3 hours duration.
5. Error estimation may be included for few experiments



SYLLABUS

COURSE: B. Sc. MATHEMATICS

Revised on: 2017-18

With Effective from A/Y: 2018-19

**DEPARTMENT OF PG STUDIES AND RESEARCH IN
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Structure of B.Sc. Mathematics papers

Semester	Title of the paper		Teaching hrs/week	Duration of Exam (hrs)	IA MARKS	EXAM MARKS	TOTAL MARKS	Semester Total
I	BSM 1	Theory	5 hrs	3 hrs	10	70	80	100
		Practical	3 hrs	3 hrs	-	20	20*	
II	BSM 2	Theory	5 hrs	3 hrs	10	70	80	100
		Practical	3 hrs	3 hrs	-	20	20	
III	BSM 3	Theory	5 hrs	3 hrs	10	70	80	100
		Practical	3 hrs	3 hrs	-	20	20	
IV	BSM 4	Theory	5 hrs	3 hrs	10	70	80	100
		Practical	3 hrs	3 hrs	-	20	20	
V	BSM 5	Theory	4 hrs	3 hrs	10	70	80	100
		Practical	2 hrs	3 hrs	-	20	20	
	BSM 6	Theory	4 hrs	3 hrs	10	70	80	100
		Practical	2 hrs	3 hrs	-	20	20	
VI	BSM 7	Theory	4 hrs	3 hrs	10	70	80	100
		Practical	2 hrs	3 hrs	-	20	20	
	BSM 8	Theory	4 hrs	3 hrs	10	70	80	100
		Practical	2 hrs	3 hrs	-	20	20	

* In the Practical component out of 20 marks: 15 for practical exam + 3 for viva + 2 for lab record.



Syllabus

B.Sc. Mathematics (Theory and Practicles)

I SEMESTER

Paper - BSM 1: Algebra - I and Calculus - I

Total: 78 Hrs

Matrices: Symmetric and Skew Symmetric matrices, Algebra of Matrices; Row and column reduction, Echelon form, Rank of a matrix; Inverse of a matrix by elementary operations; Solution of system of linear equations; Criteria for existence of non-trivial solutions of homogeneous system of linear equations. Solution of non-homogeneous system of linear equations. Eigen values and Eigen vectors of square matrices, real symmetric matrices and their properties, reduction of such matrices to diagonal form, Cayley-Hamilton theorem, inverse of matrices by Cayley-Hamilton theorem.

02hrs/week=30hrs

Polar Co-ordinates: Polar coordinates, angle between the radius vector and tangent. Angle of Intersection of curves (polar forms), pedal equations. Derivative of an arc in Cartesian, parametric and polar forms, curvature of plane curve-radius of curvature formula in Cartesian, parametric and polar and pedal forms- center of curvature.

Successive Differentiation: nth Derivative of $(ax + b)^m$, $\log(ax + b)$, e^{ax} , $e^{ax} \sin(bx + c)$, $e^{ax} \cos(bx + c)$, $\sin(ax + b)$, $\cos(ax + b)$, Leibnitz theorem (with proof) and applications.

Function of two and three variables: continuity, partial derivatives EULERS Theorem, maxima and minima (Two variables).

03hrs/week=48hrs

Reference Books:

1. Topics in Algebra - I N Herstein, Publisher John Wiley & Sons.
 2. University Algebra - N.S. Gopalakrishnan, New Age International (P) Limited
 3. Theory of Matrices - B S Vatsa, New Age International Publishers.
 4. Matrices - A R Vasista, Krishna Prakashana Mandir.
 5. Elements of Real Analysis - Shanti Narayan, S. Chand & Company, New Delhi.
 6. Differential Calculus - Shanti Narayan, S. Chand & Company, New Delhi.
 7. Calculus – Lipman Bers, Holt, Rinehart & Winston.
 8. Calculus - S Narayanan & T. K. Manicavachogam Pillay, S. Viswanathan Pvt. Ltd., vol. I & II.
 9. Schaum's Outline of Calculus - Frank Ayres and Elliott Mendelson, 5th ed. USA: Mc. Graw Hill., 2008.
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PRACTICAL – 1:

Total: 42Hrs

Practicals with Free and Open Source Software (FOSS) tools for computer programs

(3 hours/ week per batch)

Softwares used: 1. Maxima

2. Scilab

Level - 1: Fundamental Computer Applications

- 1. Word:** Creating documents, saving in personal folders, sending files to the other users through email-id (documents include all kind of mathematical equations with Greek letters, differentiations, integrations, matrices, vectors, etc.).
- 2. Excel:** Creating documents, save in personal folders, sending files through emails to other users (documents contains employees' salaries, students' marks with total, average, division, student attendance list, etc.).
- 3. Power point:** Create power point presentation documents which includes Mathematical equations and solutions, programs copy from Scilab, Maxima etc.
- 4. Mails creation:** Creating email-id through sign up through Google/Yahoo/Rediff etc. attaching files, sending messages to other mail-ids.

3 hrs/week - 12 hrs.

Level - 2: Basics in Scilab and Maxima

1. Procedure of opening Scilab console and Scilab notes.

- Writing mathematic functions and commands on console.
- Writing procedure – syntax in Sci-notes (i) If, (ii) If-else, (iii) nested-if, (iv) while-loop, (v) for-loop with example, (vi) Arrays, etc.

Examples:

- Various commands on Matrices (Addition of matrices, Multiplication of matrices, Inverse of the Matrix, etc.)
- Programs to find the age for eligible to vote.
- Programs to calculate the total and average of marks of students and check the division.
- Program to reduce the given matrix into lower triangular and upper triangular matrices
- Program to find Row reduced echelon form and normal form for given matrices.
- Program to test consistency of system of linear equations and solutions.

3 hrs/week - 15 hrs.

2. Procedure of opening Maxima window for writing commands and programs.

- Writing mathematic functions and commands on Maxima window.
- Writing procedure – syntax in Maxima window (i) If, (ii) If-else, (iii) nested-if, (iv) while-loop, (v) for-loop with example, (vi) Arrays, etc.

Examples:

- Various commands on Matrices (Addition of matrices, Multiplication of matrices, Inverse of the Matrix, etc.)
- Programs to find the age for eligible to vote.
- Programs to calculate the total and average of marks of students and check the division.
- Program to find Eigen values and Corresponding Eigen vectors of the matrix using MAXIMA.



- Program to verify the Cayley-Hamilton theorem for given matrix using MAXIMA
 - Introduction to Maxima and commands for successive derivatives and Leibnitz rule.
- 3 hrs/week - 15 hrs.**
-

II SEMESTER

Paper - BSM 2: Algebra – II and Calculus - II

Total: 78 Hrs

Groups: Definition of a group with examples and properties, Problems there on, Subgroups, center of groups, order of an element of a group, order of a group, cyclic groups, Coset decomposition, Lagrange's theorem and its consequences. Fermat's theorem and Euler's theorem.

02hrs/week=30hrs

Theory of plane Curves: Asymptotes, envelopes, singular points, cusp, node, and conjugate points.

Mean value Theorems: Continuity and differentiability (Definitions only). Theorems on derivatives: Rolle's Theorem, Lagrange's mean value theorem and Cauchy mean value theorem. Taylor's and Maclaurin's series (problems only).

L'Hospital's rule: Statement of L' Hospital's rule and problems there on.

02hrs/week=32hrs

Integral calculus: Recapitulation of Algebraic rational and irrational functions and rational functions involving trigonometric functions and definite integrals. Reduction Formulae for $\int \sin^n x$, $\int \cos^n x$, $\int \tan^n x$, $\int \cot^n x$, $\int \sec^n x$, $\int \operatorname{cosec}^n x$, $\int \sin^m x \cos^m x dx$ with definite limit. Differentiation under the integral sign by Leibnitz rule.

01hrs/week=16hrs

Reference Books:

1. Higher algebra - Bernard & Child, Arihant, ISBN: 9350943199/ 9789350943199.
 2. Topics in Algebra - I N Herstein, Wiley Eastern Ltd., New Delhi.
 3. Modern Algebra - Sharma and Vasishta, Krishna Prakashan Mandir, Meerut, U.P.
 4. Analytical Solid Geometry - Shanti Narayan, New Delhi: S. Chand and Co. Pvt. Ltd., 2004
 5. Textbook of BSc Mathematics - Chakravarty L.N, Vol 1, ISBN: 1234567176244, Chethana Book House
 6. Differential Calculus - Shanti Narayan, S. Chand & Company, New Delhi.
 7. Integral Calculus - Shanti Narayan and P K Mittal, S. Chand and Co. Pvt. Ltd.,
 8. Schaum's Outline of Calculus - Frank Ayres and Elliott Mendelson, 5th ed. USA: Mc. Graw Hill., 2008.
-

PRACTICAL - 2

Total: 42 Hrs

**Practicals with Free and Open Source Software (FOSS) tools for computer programs
(3 hours/ week per batch)**

**Softwares used: 1. Maxima
2. Scilab**

LIST OF PROGRAMMES

1. Program to construct Cayley table and test abelian for given finite set using SCILAB.
 2. Program to test abelian group properties for given finite set using SCILAB
 3. Program to find all possible cosets of the given finite group using SCILAB
 4. Program to find all generators and corresponding all possible subgroups for the given cyclic group using SCILAB
 5. Programs to verify Lagrange's theorem for given finite group.
 6. Program to verify the Euler's theorem for given finite group using SCILAB.
 7. Programs for finding limits by comparing left and right limits using MAXIMA
 8. Programs for testing continuity of the function at $x = a$ and x in $[a, b]$ using MAXIMA
 9. Programs for testing differentiability of the function at $x = a$ and x in (a, b) using MAXIMA
 10. Programs to verify Rolle's theorem for given function using MAXIMA
 11. Programs to verify Lagrange's mean value theorem for given function using MAXIMA
 12. Programs to verify Cauchy's Mean value theorem using MAXIMA
 13. Programs to verify Taylor's Mean value theorem using MAXIMA
 14. Programs to construct series using Maclaurin's series
 15. Programs to find limit of the function using L'Hospital's rule.
-

III SEMESTER

Paper - BSM 3: Algebra - III and Differential Equations - I

Total: 78 Hrs

Group Theory: Normal Subgroups, definition, examples and standard theorems on normal subgroups. Quotient groups, Homomorphism, isomorphism and fundamental theorem of homomorphism of groups.

02hrs/week=30hrs

Ordinary Differential Equation: Definition of an ordinary differential equation, its order and degree. Classification of solutions. Solution of first degree and first order equations.

- (1) Variable separable
- (2) Homogeneous and reducible to homogeneous form.
- (3) Linear and Bernoulli's form
- (4) Exact equations and reducible to exact form with standard I.F. Necessary and sufficient condition for the equation to be exact.

Equations of first order and higher degree. Solvable for p, Solvable for x (singular solutions), Solvable for y (singular solutions) and Clairaut's equation. Orthogonal trajectories. Second and higher order linear differential equations with constant co-efficient, complementary functions, Particular integral, standard types, Cauchy-Euler differential equations. Simultaneous differential equations with constant co-efficient (two variables).

03hrs/week=48hrs

Reference Books:

1. Higher algebra - Bernard & Child, Arihant, ISBN: 9350943199/ 9789350943199.
 2. Topics in Algebra - I N Herstein, Wiley Eastern Ltd., New Delhi.
 3. Modern Algebra - Sharma and Vashishta, Krishna Prakashan Mandir, Meerut, U.P.
 4. Textbook of BSc Mathematics - Chakravarthy L.N, Vol 2, ISBN:1234567176245, Chethana Book House.
 5. Ordinary and Partial Differential Equations - M D Raisinghania, S. Chand and Co. Pvt. Ltd.
 6. Schaum's outline of theory and problems of Differential Equations - Frank Ayres, McGraw-Hill Publishing Co.
 7. Differential Equations and Its Applications - S Narayanan and T K Manicavachagom Pillay, S V Publishers Private Ltd.
 8. Differential equation with Applications and Historical Notes - G F Simmons, 2nded. McGraw-Hill Publishing Company.
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PRACTICAL - 3

Total: 42 Hrs

Practicals with Free and Open Source Software (FOSS) tools for computer programs

(3 hours/ week per batch)

Softwares used: 1. Maxima

2. Scilab

LIST OF PROGRAMMES

1. Program to test normality of a given subgroup and a group using SCILAB.
2. Program to test homomorphism of a give function from $G \rightarrow G'$ using SCILAB.
3. Program to test isomorphism of a given function from $G \rightarrow G'$ using SCILAB.
4. Program to find the solution of given differential equation using Maxima and plotting the Solution-I. (1st order 1st degree non-linear)
5. Program to find the solution of given differential equation using Maxima and plotting the solution-II. (1st order 1st degree linear)
6. Program to find the solution of given differential equation using Maxima and plotting the solution-III. (1st order but not of 1st degree)
7. Program to find complementary function and particular integral of given differential equation with constant coefficients.
8. Program to find solution of given simultaneous differential equations with constant coefficients.
9. Programs for plotting curves in 2D Plane which are in Cartesian form.
10. Programs for plotting curves in 2D Plane which are in polar form.
11. Programs for plotting curves in 2D Plane which are in Parametric form.
12. Programs for plotting curves in 3D space using MAXIMA/SCILAB.

IV SEMESTER

Paper - BSM 4: Differential Equations - II and Analysis

Total: 78 Hrs

Ordinary Linear Differential Equations: Solution of ordinary second order linear differential equation with variable coefficients by the methods:

1. When a part of complementary function is given,
2. Changing the independent variable,
3. Changing the dependent variable,
4. When a first integral is given (exact equation),
5. Variation of parameters

02hrs/week=30hrs

Sequence of Real Numbers: Definition of a sequence, limits of a sequence, algebra of limit of a Sequence-Convergent, Divergent and Oscillatory sequence problems there on. Bounded sequence; every convergent sequence is bounded-converse is not true, Monotonic Sequence and Their properties, Cauchy's sequence.

Infinite Series: Definition of convergent, divergent and oscillatory of series - standard properties and results, Geometric and Hyper geometric series. Cauchy's criterion (statement only). Tests of convergence of series - comparison tests - D'Alemberts Ratio test - Raabe's test - Cauchy's root test. The Integral test - Absolute Convergence and Leibnitz's test for alternating series.

03hrs/week=48hrs

Reference Books:

1. Ordinary and Partial Differential Equations - M D Raisinghania, S. Chand and Co. Pvt. Ltd.
2. Schaum's outline of theory and problems of Differential Equations - Frank Ayres, McGraw-Hill Publishing Co.
3. Differential Equations and Its Applications - S Narayanan and T K Manicavachagom Pillay, S V Publishers Private Ltd.
4. Differential equation with Applications and Historical Notes - G F Simmons, 2nd ed.: McGraw-Hill Publishing Company.
5. Elements of Real Analysis - Shanti Narayan, S. Chand & Company, New Delhi.
6. Mathematical Analysis - S. C. Malik, Savita Arora, New Age Science Ltd.
7. Principles of Mathematical Analysis - Walter Rudin, McGraw-Hill Publishing Company.

PRACTICAL - 4

Total: 42 Hrs

Practicals with Free and Open Source Software (FOSS) tools for computer programs
(3 hours/ week per batch)
Softwares used: 1. Maxima

2. Scilab

LIST OF PROGRAMMES

1. Program to find the solution of Differential Equations by finding complimentary functions
 2. Program to find the solution of Differential Equations by changing independent variable.
 3. Program to find the solution of Differential Equations by changing dependent variable.
 4. Program to test for exactness and solve the Differential Equations of second order.
 5. Program to illustrate convergence, divergence or oscillatory of the given sequence using SCILAB/MAXIMA.
 6. Program to illustrate convergence, divergence or oscillatory of the given series using SCILAB/MAXIMA.
 7. Using Cauchy's criterion to determine convergence of the given sequence.
 8. Using Cauchy's criterion to determine convergence of the given series.
 9. Program to test the convergence of the series using Leibnitz's theorem.
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V SEMESTER

Paper - BSM 5: Differential Equations– III, Fourier series and Algebra-IV

Total: 60 Hrs

Total and Simultaneous Differential Equations: Necessary condition for the equation $P dx + Q dy + R dz = 0$ to be integrable-problems there on. Solutions of equation of the $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$.

Partial Differential Equations: Formation of partial differential equation –Lagrange's linear equation: $Pp + Qq = R$. Four standard types of first order partial differential equations, Charpit's methods.

Fourier Series: Periodic functions and properties-Fourier series of functions with period 2π and period $2L$. Half range cosine and sine series.

02hr/week=30hrs

Rings, Integral Domains and Fields: Rings- Definition, Types of rings. Examples properties of rings - Rings of Integers Modulo-n - Integral domains - Fields. Examples - subrings - Ideals -Principal ideals, Maximal ideal commutative rings, examples and standard properties- Homomorphism and Isomorphism - properties of homomorphism of rings. Quotient rings.

02hrs/week=30hrs

Reference Books:

1. Ordinary and Partial Differential Equations - M D Raisinghania, S. Chand and Co. Pvt. Ltd.
2. Schaum's outline of theory and problems of Differential Equations - Frank Ayres, McGraw-Hill Publishing Co.
3. Differential Equations and Its Applications - S Narayanan and T K Manicavachagom Pillay, S V Publishers Private Ltd.



4. Differential equation with Applications and Historical Notes - G F Simmons, 2nded.: McGraw-Hill Publishing Company.
5. Topics in Algebra - I N Herstein, Wiley Eastern Ltd., New Delhi.
6. Modern Algebra - Sharma and Vashishta, Krishna Prakashan Mandir, Meerut, U.P.
7. Textbook of BSc Mathematics - Chakravarthy L.N., Vol 2, ISBN:1234567176245, Chethana Book House.

PRACTICAL - 5

Total: 30Hrs

Practicals with Free and Open Source Software (FOSS) tools for computer programs

(2 hours/ week per batch)

Softwares used: 1. Maxima

2. Scilab

LIST OF PROGRAMMES

1. Program to find the solution of the given total differential equation.
2. Program to find the solution of the given simultaneous differential equations.
3. Program to find the solution of the given partial differential equation.
4. Program to find whether given finite set is ring or not?
5. Program to show whether given subset of a finite ring is a subring or Not?
6. Program to find whether given subset of a finite ring is an ideal or not?
7. Program to find whether given function is a homomorphism or not?
8. Program to find whether given function is an isomorphism or not?
9. To plot periodic functions with period 2π and $2L$
10. To find full range trigonometric Fourier series of some simple functions with period 2π and $2L$.
11. Plotting of functions in half-range and including their even and odd extensions.
12. To find the half-range sine and cosine series of simple functions.
13. To find the half-range sine and cosine series of simple functions.

V SEMESTER

Paper - BSM 6: Line and Multiple Integrals and Laplace Transforms

Total: 60 Hrs

Line and Multiple Integrals: Definition of line integral and basic properties, examples on evaluation of line integrals. Definition of double integrals, evaluation of double integrals (1) under given limits (2) In regions bounded by given curves - change of variables, surface area as double integrals. Definition of triple integrals and evaluation, change of variables, volume as a triple integral.

02hrs/week=30hrs

Laplace Transforms: Definition and basic properties - Laplace transforms of e^{kt} , $\cos kt$, $\sin kt$, t^n , $\cosh kt$ and $\sinh kt$ - Laplace transform of $e^{at} F(t)$, $t^n F(t)$, $F(t)/t$ - problems - Laplace transform of derivatives of functions - Laplace transforms of integrals of functions - Laplace

transforms of unit step functions - Inverse Laplace transforms - problems. Convolution theorem - Simple initial value problems - Solution of first and second order differential equations with constant coefficients by Laplace transform method.

02hrs/week=30hrs

Reference Books:

1. Integral Calculus - H.S. Dhimi, New Age International Pvt. Ltd Publishers.
 2. Text Book of Multiple Integrals - A.K. Sharma, Discovery Publishing House, New Delhi.
 3. Differential and Integral Calculus, Vol. II - N. Piskunov, CBS Publishers & Distributors Pvt. Ltd.
 4. Mathematical Analysis - S. C. Malik, Savita Arora, New Age Science Ltd.
 5. Higher Engineering Mathematics - B.S. Grewal, Khanna publishers.
 6. Advanced Engineering Mathematics by Erwin Kreyszig, Wiley; Ninth edition, ISBN:8126531355
 7. Schaum's Outline of Laplace Transforms - Murray Spiegel, McGraw-Hill Education
 8. Laplace and Fourier Transforms - M. D. Raisinghania, New Delhi, India: S. Chand and Co. Ltd.
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PRACTICAL - 6

Total: 30Hrs

Practicals with Free and Open Source Software (FOSS) tools for computer programs

(2 hours/ week per batch)

Softwares used: 1. Maxima

2. Scilab

LIST OF PROGRAMMES

1. Evaluation of the line integral with constant limits.
 2. Evaluation of the double integral with constant limits.
 3. Evaluation of the triple integral with constant limits.
 4. Evaluation of the line integral with variable limits.
 5. Evaluation of the double integral and triple integral with variable limits.
 6. Evaluation of area of the surface as double integral.
 7. Evaluation of volume of the solid as a triple integral.
 8. Finding the Laplace transforms of some standard functions.
 9. Finding the inverse Laplace transform of simple functions.
 10. Program to Verify of Convolution Theorem.
 11. Program to find the solution of a differential equation using Laplace transform method.
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VI SEMESTER

Paper - BSM 7: Vector Space and Numerical Analysis

Total: 60 Hrs

Vector Space: Vector spaces, examples, subspaces, criterion for a subset to be a subspace. Concepts of linear dependence and independence. Fundamental theorem of linear dependence. Basis and dimension, standard properties of linearly independent and dependent sets examples, illustrations, concepts and results.

Linear transformations, Matrix representation of linear maps. Rank and nullity of a linear transformation.

02hrs/week=30hrs

Numerical Analysis: Solution of algebraic and transcendental equations of one variable by Bisection, Regula-Falsi and Newton-Raphson methods.

Finite differences (Forward and Backward differences) Interpolation, Newton's forward and backward interpolation formulae. Divided Differences-Newton's divided difference formula. Lagrange's interpolation formulae.

Numerical differentiation using Newton's forward and backward interpolation formulae.

Numerical Integration-Trapezoidal rule, Simpson's one-third and three - eight rule, Weddle's rule. (without proof).

Numerical solution of ordinary differential equations of first order and first degree-Picard's method, modified Euler's method, Runge-kutta method of fourth-order (No derivations of formulae).

02hrs/week=30hrs

Reference Books:

1. Herstein: Topics in Algebra, Wiley Eastern Ltd., New Delhi.
 2. Modern Algebra - Sharma and Vashishta, Krishna Prakashan Mandir, Meerut, U.P.
 3. Schaum's outline of Linear Algebra - Seymour Lipschutz, McGraw Hill Education.
 4. The Linear Algebra a Beginning Graduate Student Ought to Know - Golan, Jonathan S, Springer International Publishing.
 5. Introductory Methods of Numerical Analysis - S.S. Sastry, Prentice Hall India Learning Private Limited.
 6. Numerical Methods: For Scientific and Engineering Computation - M.K. Jain, S.R.K. Iyengar, R.K. Jain, NEW AGE; 6th edition
 7. Numerical Analysis - B. D Gupta, Stosius Inc/Advent Books Division.
 8. Finite Difference and Numerical Analysis - H. C Saxena, S. Chand Publishing.
 9. Numerical Methods for Scientists and Engineers - B. S. Grewal, Khanna Publishers.
 10. Advanced Engineering Mathematics - E. Kreyszig.
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PRACTICAL - 7

Total: 30Hrs

Practicals with Free and Open Source Software (FOSS) tools for computer programs

(2 hours/ week per batch)

Softwares used: 1. Maxima

2. Scilab

LIST OF PROGRAMMES

1. Program to verify given set is vector space or not?
 2. Program to find whether given set is L.I or L.D.
 3. Program to verify whether given function is basis or not?
 4. Program to verify given mapping is Linear transformation or not?
 5. Program to find matrix of a given linear transformation.
 6. Program to find the rank and nullity of a linear transformation?
 7. Scilab/Maxima programs on Interpolations with equal intervals.
 8. Scilab/Maxima programs on Interpolations with unequal intervals.
 9. Scilab/Maxima programs to evaluate integrals using trapezoidal, Simpson's $1/3^{\text{rd}}$ rule and Simpson's $3/8^{\text{th}}$ rule.
 10. Solving ordinary differential equation by modified Euler's method.
 11. Solving ordinary differential equation by Runge-Kutta method of 4^{th} order.
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VI SEMESTER

Paper - BSM 8: Riemann Integration, Vector Calculus and Complex Analysis

Total: 60 Hrs

Riemann Integrations: Upper and Lower sums, Refinement of partitions, upper and lower integrals, integrability, Criterion for integrability, continuous and monotonic functions are Riemann integrable, integral as the limit of a sum, integrability of the sum and product of integrable functions, integrability of the modulus of an integrable function, the fundamental theorem of calculus.

Vector Calculus: Scalar field – gradient of a scalar field, geometrical meaning – directional derivative – Maximum directional derivative – Angle between two surfaces - vector field–divergence and curl of a vector field – solenoidal and irrotational fields – scalar and vector potentials – Laplacian of a scalar field – vector identities. Standard properties, Harmonic functions, Problems.

2hrs/week=30hrs

Complex Analysis: Complex numbers, the complex plane - conjugate and modulus of a complex number - the modulus-argument form - geometric representation - Equation to circle and line in the complex form.

Functions of a complex variable, limit, continuity and differentiability of function- Analytic function - Cauchy-Riemann equations in Cartesian form. Sufficient conditions for analytic (in Cartesian form). Real and imaginary parts of analytic functions are harmonic, construction of analytic function given real or imaginary parts.

02hrs/week=30hrs

Reference Books:

1. Mathematical Analysis - S. C. Malik, Savita Arora, New Age Science Ltd.
 2. Principles of Mathematical Analysis - Walter Rudin, McGraw-Hill Publishing Company.
 3. Real and Complex Analysis - Walter Rudin, McGraw-Hill Higher Education.
 4. Elements of Real Analysis - Shanti Narayan, S. Chand & Company, New Delhi.
 5. Complex Variables and Applications - James Brown, Ruel Churchill, McGraw-Hill.
 6. Foundations of Complex Analysis - S. Ponnusamy, Narosa book distributors Pvt. Ltd.-New Delhi
 7. Schaum's Outline of Complex Variables - Murray Spiegel, John Schiller, Seymour Lipschutz, McGraw-Hill Education.
 8. Complex Analysis - Lars Ahlfors, McGraw-Hill Education.
 9. Vector Calculus - Paul C. Matthews, Springer-Verlag London.
 10. Golden Vector Calculus, R. Gupta, Laxmi Publications
 11. A Textbook of Engineering Mathematics - N. P. Bali, N. Ch. Narayana Iyengar, Laxmi Publications.
 12. Textbook of Vector Calculus - Shanti Narayan, S. Chand.
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PRACTICALS - 8**Total: 30Hrs****Practicals with Free and Open Source Software (FOSS) tools for computer programs****(2 hours/ week per batch)****Softwares used: 1. Maxima****2. Scilab****LIST OF PROGRAMMES**

1. Programmes to find lower and upper Riemann sum.
 2. Programmes to find lower and upper Riemann integration.
 3. To demonstrate the physical interpretation of gradient, divergence and curl.
 4. Writing gradient, divergence, curl and Laplacian in cylindrical coordinates.
 5. Writing gradient, divergence, curl and Laplacian in spherical coordinates.
 6. Using cyclic notations to derive different vector identities.
 7. Using cyclic notations to derive some more vector identities.
 8. Programs to verify given functions satisfy Cauchy-Riemann equations both in Cartesian and polar form.
 9. Implementation of Milne-Thomson method in constructing analytic functions (simple examples).
 10. Illustrating orthogonality of the surfaces obtained from the real and imaginary parts of an analytic function.
 11. Program to verify given function is harmonic or not.
 12. Program to verify real part of an analytic function being harmonic.
 13. Program to verify imaginary part of an analytic function being harmonic.
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**PATTERN OF THE QUESTION PAPER****FROM 1st TO 6th SEMESTER****Time:3 Hours****Max.Marks:70**

I	Answer any FIVE of the following (8 questions are given)	$5 \times 2 = 10$ Marks
II	Answer any THREE of the following (05 questions are given)	$3 \times 5 = 15$ Marks
III	Answer any THREE of the following (05 questions are given)	$3 \times 5 = 15$ Marks
IV	Answer any THREE of the following (05 questions are given)	$3 \times 5 = 15$ Marks
V	Answer any THREE of the following (05 questions are given)	$3 \times 5 = 15$ Marks

PATTERN OF THE QUESTION PAPER**PAPER -BSM 1****Time:3 Hours****Max.Marks:70****NOTE: Answer All Questions**I. Answer any **FIVE** of the following:Marks: $5 \times 2 = 10$

1. } Matrices
2. }
3. }
4. } Polar Co-ordinates
5. }
6. } Successive Differentiation
7. }
8. } Function of two and three variables

II. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. }
3. } Matrices
4. }
5. }

III. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. } Matrices
3. }
4. }
5. } Polar Co-ordinates

IV. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. } Polar Co-ordinates
3. }
4. }
5. } Successive Differentiation



V. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. } Successive Differentiation
2. }
3. }
4. } Function of two and three variables
5. }

PAPER - BSM 2

Time:3 Hours

Max.Marks:70

NOTE: Answer All Questions

I. Answer any **FIVE** of the following:

Marks: $5 \times 2 = 10$

1. } Groups
2. }
3. } Theory of plane Curves
4. }
5. } Mean value theorems
6. }
7. } L'Hospital's rule
8. } Integral Calculus

II. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. }
3. } Groups
4. }
5. }

III. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. } Theory of plane Curves
3. }
4. } Mean value Theorems
5. }

IV. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. } Mean value Theorems
3. }
4. } L'Hospital's rule
5. }

V. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. }
3. } Integral Calculus
4. }
5. }

**PAPER - BSM 3**

Time:3 Hours

Max.Marks:70

NOTE: Answer All QuestionsI. Answer any **FIVE** of the following:Marks: $5 \times 2 = 10$

1. }
2. } Group Theory
3. }
4. }
5. }
6. } Ordinary Differential Equation
7. }
8. }

II. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. }
3. } Group Theory
4. }
5. }

III. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. }
3. } Ordinary Differential Equation (up to Exact)
4. }
5. }

IV. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. }
3. } Ordinary Differential Equation (after Exact up to orthogonal trajectories)
4. }
5. }

V. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. }
3. } Ordinary Differential Equation (Higher order and simultaneous equations)
4. }
5. }

PAPER - BSM 4

Time:3 Hours

Max.Marks:70

NOTE: Answer All QuestionsI. Answer any **FIVE** of the following:Marks: $5 \times 2 = 10$

1. }
2. } Ordinary Linear Differential Equations
3. }
4. }
5. }
6. } Sequence and Series
7. }
8. }

II. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$



1. }
 - 2. }
 - 3. } Ordinary Linear Differential Equations
 - 4. }
 - 5. }

III. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
 - 2. } Ordinary Linear Differential Equations
 - 3. }
 - 4. } Sequence of Real Numbers
 - 5. }

IV. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
 - 2. } Sequence of Real Numbers
 - 3. }
 - 4. } Infinite Series
 - 5. }

V. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
 - 2. } Infinite Series
 - 3. }
 - 4. } The Integral test and Leibnitz's test
 - 5. }

PAPER - BSM 5

Time: 3 Hours

Max. Marks: 70

NOTE: Answer All Questions

I. Answer any **FIVE** of the following:

Marks: $5 \times 2 = 10$

1. }
 - 2. } Total and Simultaneous Differential Equations
 - 3. }
 - 4. } Partial Differential Equations
 - 5. } Fourier Series
 - 6. }
 - 7. } Rings, Integral Domains and Fields
 - 8. }

II. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
 - 2. } Total and Simultaneous Differential Equations
 - 3. }
 - 4. }
 - 5. } Partial Differential Equations

III. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
 - 2. } Partial Differential Equations
 - 3. }
 - 4. }
 - 5. } Fourier Series

IV. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$



1. }
2. } Fourier Series
3. }
4. } Rings (up to Subrings)
5. }

V. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. }
3. } Rings (From Ideals to till end)
4. }
5. }

PAPER - BSM 6

Time: 3 Hours

Max. Marks: 70

NOTE: Answer All Questions

I. Answer any **FIVE** of the following:

Marks: $5 \times 2 = 10$

1. }
2. } Line and Multiple Integrals
3. }
4. }
5. }
6. } Laplace Transforms
7. }
8. }

II. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. } Line Integrals
3. }
4. } Double Integrals
5. }

III. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. } Double Integrals
3. }
4. } Triple Integrals
5. }

IV. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. }
3. } Laplace Transforms
4. }
5. }

V. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. }
3. } Laplace Transforms
4. }
5. }

**PAPER - BSM 7**

Time:3 Hours

Max.Marks:70

NOTE: Answer All QuestionsI. Answer any **FIVE** of the following:Marks: $5 \times 2 = 10$

1. }
2. } Vector Space
3. }
4. }
5. }
6. } Numerical Analysis
7. }
8. }

II. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. }
3. } Vector Space (up to basis and dimensions)
4. }
5. }

III. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. }
3. } Vector Space (Linear transformation till end)
4. }
5. }

IV. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. }
3. } Numerical Analysis (up to numerical differentiation)
4. }
5. }

V. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$

1. }
2. }
3. } Numerical Analysis (numerical integration till end)
4. }
5. }

PAPER - BSM 8

Time:3 Hours

Max.Marks:70

NOTE: Answer All QuestionsI. Answer any **FIVE** of the following:Marks: $5 \times 2 = 10$

1. }
2. } Riemann Integrations
3. }
4. } Vector Calculus
5. }
6. } Complex Analysis
7. }
8. }

II. Answer any **THREE** of the following:Marks: $3 \times 5 = 15$



1. }
2. }
3. } Riemann Integrations
4. }
5. }

III. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. }
3. } Vector Calculus
4. }
5. }

IV. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. }
3. } Complex Analysis (up to analytic functions)
4. }
5. }

V. Answer any **THREE** of the following:

Marks: $3 \times 5 = 15$

1. }
2. }
3. } Complex Analysis (from analytic functions till
4. } "
5. }

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