BENGALURU CITY UNIVERSITY

NEW SYLLABUS 2019 – 20

B.COM. (REGULAR) DEGREE
(CBCS - SEMESTER SCHEME)

DEPARTMENT OF COMMERCE

Central College Campus, Bangalore – 560 001.

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Bengaluru
City University

DEPARTMENT OF COMMERCE

REGULATIONS PERTAINING TO B.COM (REGULAR) DEGREE (CBCS - SEMESTER SCHEME) 2019 – 20

I. OBJECTIVES :

1. To cater to the manpower needs of companies in Accounting, Taxation, Auditing, Financial analysis and Management.
2. To develop business analysts for companies, capital markets and commodity markets.
3. To prepare students to take up higher education to become business scientists, researchers, consultants and teachers, with core competencies.
4. To develop human resources to act as think tank for Business Development related issues.
5. To develop entrepreneurs.
6. To develop business philosophers with a focus on social responsibility and ecological sustainability.
7. To develop IT enabled global middle level managers for solving real life business problems and addressing business development issues with a passion for quality competency and holistic approach.
8. To develop ethical managers with interdisciplinary approach.
9. To prepare students for professions in the field of Accountancy - Chartered Accountancy, Cost and Management Accountancy, Company Secretary, Professions in Capital and Commodity Markets, Professions in life and non-life insurance and professions in Banks by passing the respective examinations of the respective professional bodies.
10. To develop the students for competitive examinations of UPSC, KPSC, BSRB, Staff Selection Commission, etc.

II. ELIGIBILITY FOR ADMISSION:

Candidates who have completed Two years Pre – University course of Karnataka State or its equivalent as notified by the university from time to time.

III. DURATION OF THE COURSE:

The course of study is Three (03) years of Six Semesters. A candidate shall complete his/her degree within six (06 academic years from the date of his/her admission to the first semester. A Student who successfully completes Three (03) years of the course will be awarded Bachelor's Degree in Commerce (B.Com.).

IV. MEDIUM OF INSTRUCTION

The medium of instruction shall be English. However, a candidate will be permitted to write the examination either in English or in Kannada (Kannada version Only for Theory Papers).

V. CLASS ROOM STRENGTH OF STUDENTS

There shall be Maximum of 100 students in each section.

VI. ATTENDANCE:

a. For the purpose of calculating attendance, each semester shall be taken as a Unit.
b. A student shall be considered to have satisfied the requirement of attendance for the semester, if he/she has attended not less than 75% in aggregate of the number of working periods in each of the subjects compulsorily.
c. A student who fails to complete the course in the manner stated above shall not be permitted to take the University examination.

VII. COURSE MATRIX

See Annexure – 1 for B.Com Degree (Regular) Course Matrix.

VIII. TEACHING AND EVALUATION:

M.Com/MBA/M.Com (F&A)/MBS graduates with B.Com, B.B.M, and BBA & BBS as basic degree from a recognized university are only eligible to teach and to evaluate the subjects (except languages, compulsory additional subjects and core Information Technology related subjects) mentioned in this regulation. Languages and additional subjects shall be taught by the graduates as recognized by the respective board of studies.

IX. PRACTICALS / RECORD MAINTENANCE AND SUBMISSION:

a. Every college is required to establish a dedicated business lab / computer lab for the purpose of conducting practical classes & online assignments.
b. In every semester, the student should maintain a Practical Record Book in which practical exercises / programs are to be recorded. This Record has to be submitted to the Faculty for evaluation at least 15 days before the end of each semester.
c. The BOE is authorized to make random surprise visits to the colleges and verify practical records and marks awarded.

X. SCHEME OF EXAMINATION:

a. There shall be a university examination at the end of each semester. The maximum marks for the university examination in each paper shall be 70.
b. Of the 30 marks of Internal Assessment of Theory Papers, 20 marks shall be based on two tests. Each test shall be of at least 30 Minutes duration to be held during the semester. The average of two tests shall be taken as the internal assessment marks. The remaining 10 marks of the Internal Assessment shall be based on Attendance.

c. The marks based on attendance shall be awarded as given below:
   - 76% to 80% = 04 marks.
   - 81% to 85% = 06 marks.
   - 86% to 90% = 08 marks.
   - 91% to 100% = 10 marks.

d. Internal Assessment Marks for Practicals shall be awarded by the faculty concerned based on Syllabus for Practicals provided in each Semester.

XI. APPEARANCE FOR THE EXAMINATION:

a) A candidate shall apply for all the parts in each examination when he/she appears for the first time. A candidate shall be considered to have appeared for the examination only if he/she has submitted the prescribed application for the examination along with the required fees to the university.

b) A candidate who has passed any language under Part-I shall be eligible to claim exemption from the study of the language if he/she has studied and passed the language at the corresponding level.

c) Further, candidates shall also be eligible to claim exemption from studying and passing in those commerce subjects which he/she has studied and passed at the corresponding level, subject to the conditions stipulated by the university.

d) A candidate who is permitted to seek admission to this degree course on transfer from any other University shall have to study and pass the subjects which are prescribed by the University. Such candidates shall not however, be eligible for the award of ranks.

XII. MINIMUM MARKS FOR A PASS:

Candidates who have obtained a minimum of 35% marks in university examination (i.e. 25 marks out of 70 marks of theory examination) and 40% in aggregate (i.e., total of university examination and internal assessment marks) in each subject shall be eligible for a pass or exemption in that subject.

XIII. CLASSIFICATION OF SUCCESSFUL CANDIDATES:

a. The results of the First to Sixth semester degree examination shall be declared and classified separately as follows:
   i. First Class: Those who obtain 60% and above of the total marks of parts I, II, III& IV.
   ii. Second Class: Those who obtain 50% and above but less than 60% of total marks of parts I, II, III & IV.
   iii. Pass Class: Rest of the successful candidates who secure 40% and above but less than 50% of marks in part I, II and III.

b. Ranks shall be declared on the basis of the aggregate marks obtained by the candidates in this degree course (excluding languages (part I) and non-core subjects (Part IV) as a whole. However, only those candidates who have passes each semester university examination in the first attempt only shall be eligible for award of ranks. The first ten ranks only shall be notified.

XIV. MEDALS AND PRIZES:

No candidates passing an external examination shall be eligible for any scholarship, fellowship, medal, prize or any other award.

XV. TERMS AND CONDITIONS:

a) A candidate is allowed to carry all the previous un-cleared papers to the subsequent semester/semesters.
b) Such of those candidates who have failed/remained absent for one or more papers henceforth called as repeaters, shall appear for exam in such paper/s during the three immediately succeeding examinations. There shall be no repetition for internal assessment test.
c) The candidate shall take the examination as per the syllabus and the scheme of examination in force during the subsequent appearances.

XVI. PATTERN OF QUESTION PAPER:

Each theory question paper shall carry 70 marks and the duration of examination is 3 hours. The Question paper shall ordinarily consist of three sections, to develop testing of conceptual skills, understanding skills, comprehension skills, articulation and application of skills. The question paper setter shall be asked to prepare TWO sets of papers with a maximum of 10% repetition. The Question Paper will be as per the following Model:

i) For Theory Examinations:

SECTION-A **1.** a, b, c, d, e ,f ,g.	(Conceptual questions) Answer any FIVE	(05 X 02 = 10 Marks)
SECTION -B: **2,3,4,5.**	(Analytical questions) Answer any THREE	(03 X 05 = 15 Marks)
SECTION-C: **6,7,8,9.**	(Essay type questions) Answer any THREE	(03 X 15 = 45 Marks)
Total		**70 Marks**

ii) For Practical Subjects Examinations:

SECTION-A: **1, 2, 3, 4, 5.**	Answer any FOUR	(04 X 05 = 20 Marks)
SECTION -B: **6, 7, 8, 9**	Answer any THREE	(03 X 10 = 30 Marks)
Total		**50 Marks**

XVII. PROVISION FOR IMPROVEMENT OF RESULTS:

The candidate shall be permitted to improve the results of the whole examination or of any Semester or a subject within the prescribed time by the university after the publication of the results. This provision shall be exercised only once during the course and the provision once exercised shall not be revoked. The application for improvement of results shall be submitted to the Registrar (Evaluation) along with the prescribed fee.

XVII. REMOVAL OF DIFFICULTY AT THE COMMENCEMENT OF THESE REGULATIONS:

If any difficulty arises while giving effect to the provision of these Regulations, the Vice Chancellor may in extraordinary circumstances, pass such orders as he may deem fit.

ANNEXURE – 1

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Bengaluru City University

B.COM (REGULAR) DEGREE
(CBCS -SEMESTER SCHEME) – 2019-20
COURSE MATRIX

I SEMESTER

	Subjects	Paper	Instruction hrs./week	Duration of Exam (hrs.)	Marks			Credits
					IA	Uni. Exam	Total	
Part 1 Languages	Language - I: Kannada/Sanskrit/Urdu/Tamil/ Telugu/Malayalam/Additional English / Marathi/ Hindi	1.1	4	3	30	70	100	2
	Language – II : English	1.2	4	3	30	70	100	2
Part 2 Optional	Financial Accounting	1.3	4	3	30	70	100	2
	Business Dynamics & Entrepreneurship	1.4	4	3	30	70	100	2
	Indian Financial Institutions & Markets	1.5	4	3	30	70	100	2
	Corporate Structure & Administration	1.6	4	3	30	70	100	2
Part 3 Practicals	Practicals on Skill Development*	1.7	2*	2	50**	50**	100	2
Part 4	Foundation Course	-	3	2	30	70	100	2
	CC & EA	-	-	-	50	-	50	1
Total Credits								**17**

* One hour of Practical Class is equal to One hour of Theory Class and the class shall be managed by a Single teacher. Practical classes may be conducted in the Business Lab. or in Computer Lab. or in the Class Room depending on the requirement. Senior / Experienced / Concerned Subject Teachers may be allotted the practical work load.

** IA marks shall be awarded on the basis of Practical Records submitted by the student and on the basis of internal assessment test- 30 marks for practical record book + 10 marks for attendance +10 marks for test. (Practical Record Books shall be preferably evaluated by a teacher other than the concerned teacher within the department/college).University examination shall be conducted with a separate Question Paper.

II SEMESTER

	Subjects	Paper	Instruction hrs./week	Duration of Exam (hrs.)	Marks			Credits
					IA	Uni. Ex.	Total	
Part 1 Languages	Language - I: Kannada/Sanskrit/Urdu/Tamil/ Telugu/Malayalam/Additional English / Marathi/ Hindi	2.1	4	3	30	70	100	2
	Language – II : English	2.2	4	3	30	70	100	2
Part 2 Optional	Advanced Financial Accounting	2.3	4	3	30	70	100	2
	Banking Operations & Innovations	2.4	4	3	30	70	100	2
	Modern Marketing	2.5	4	3	30	70	100	2
	Methods & Techniques for Business Data Analysis	2.6	4	3	30	70	100	2
Part 3 Practicals	Practicals on Skill Development*****	2.7	2*****	2	50******	50******	100	2
Part 4	Foundation Course	-	3	2	30	70	100	2
	CC & EA	-	-	-	50	-	50	1
Total Credits								**17**

* One hour of Practical Class is equal to One hour of Theory Class and the class shall be managed by a Single teacher. Practical classes may be conducted in the Business Lab. or in Computer Lab. or in the Class Room depending on the requirement. Senior / Experienced / Concerned Subject Teachers may be allotted the practical work load.

** IA marks shall be awarded on the basis of Practical Records submitted by the student and on the basis of internal assessment test- 30 marks for practical record book + 10 marks for attendance +10 marks for test. (Practical Record Books shall be preferably evaluated by a teacher other than the concerned teacher within the department/college).University examination shall be conducted with a separate Question Paper.

III SEMESTER

	Subjects	Paper	Instruction hrs./week	Duration of Exam (hrs.)	Marks			Credits
					IA	Uni. Exam	Total	
Part 1 Language	Language: I Kannada/Sanskrit/Urdu/Tamil/ Telugu/Malayalam/Additional English / Marathi/ Hindi	3.1	4	3	30	70	100	2
	Language – II: English	3.2	4	3	30	70	100	2
Part 2 Optional	Corporate Accounting	3.3	4	3	30	70	100	2
	Financial Management	3.4	4	3	30	70	100	2
	Business Regulations	3.5	4	3	30	70	100	2
	Business Data Analysis	3.6	4	3	30	70	100	2
Part 3 Practicals	Practicals on Skill Development*****	3.7	2*****	2	50******	50******	100	2
Part 4	Foundation Course	-	3	2	30	70	100	2
	CC & EA	-	-	-	50	-	50	1
Total Credits								**17**

* One hour of Practical Class is equal to One hour of Theory Class and the class shall be managed by a Single teacher. Practical classes may be conducted in the Business Lab. or in Computer Lab. or in the Class Room depending on the requirement. Senior / Experienced / Concerned Subject Teachers may be allotted the practical work load.

** IA marks shall be awarded on the basis of Practical Records submitted by the student and on the basis of internal assessment test- 30 marks for practical record book + 10 marks for attendance +10 marks for test. (Practical Record Books shall be preferably evaluated by a teacher other than the concerned teacher within the department/college).University examination shall be conducted with a separate Question Paper.

INSTRUCTION: During the beginning of III Semester students should be assigned Community Service and it shall be monitored by the Mentors. Maximum 20 Students shall be allotted to each Mentor. In addition to Commerce & Management Faculty, Faculty from Languages including English, Additional Subjects, Librarian, and Physical Education Director shall also be appointed as Mentors. The Community Service may be carried out in any type of Non-Profit Service Organization's such as, Panchayat Raj Institutions, Public Hospital, Old Age Homes, Orphanage Houses, Sports clubs, Women's organizations, Neighbourhood organizations, Religious or Educational organizations, Red Cross, Lions Club, Rotary Clubs, Youth Service Associations, Or in any other social service organization. Minimum of 15 days Field Service shall be ensured. The Report on Community Service shall be submitted within 45 days of commencement of V semester. The Report shall consist of Organisation's Profile, Nature of Service & Experience of the student, along with Certificate from the Organisation in about 20 pages. The related Marks & Credit will be awarded in the V Semester.

IV SEMESTER

	Subjects	Paper	Instruction hrs./week	Duration of Exam (hrs.)	Marks			Credits
					IA	Uni. Exam	Total	
Part 1 Language	Language - I: Kannada/Sanskrit/Urdu/Tamil/ Telugu/Malayalam/Additional English / Marathi/ Hindi	4.1	4	3	30	70	100	2
	Language – II: English	4.2	4	3	30	70	100	2
Part 2 Optional	Advanced Corporate Accounting	4.3	4	3	30	70	100	2
	Goods & Services Tax	4.4	4	3	30	70	100	2
	Cost Accounting	4.5	4	3	30	70	100	2
	E – Business & Accounting	4.6	4	3	30	70	100	2
Part 3 Practicals	Practicals on Skill Development*****	4.7	2*****	2	50******	50******	100	2
Part 4	Foundation Course	-	3	2	30	70	100	2
	CC & EA	-	-	-	50	-	50	1
Total Credits								**17**

* One hour of Practical Class is equal to One hour of Theory Class and the class shall be managed by a Single teacher. Practical classes may be conducted in the Business Lab. or in Computer Lab. or in the Class Room depending on the requirement. Senior / Experienced / Concerned Subject Teachers may be allotted the practical work load.

** IA marks shall be awarded on the basis of Practical Records submitted by the student and on the basis of internal assessment test- 30 marks for practical record book + 10 marks for attendance +10 marks for test. (Practical Record Books shall be preferably evaluated by a teacher other than the concerned teacher within the department/college).University examination shall be conducted with a separate Question Paper.

INSTRUCTION: During the beginning of IV Semester, students should be assigned INTERNSHIPS and it shall be monitored by the Mentors. Faculty from Commerce Department shall only be appointed as Mentors. Internship may be undertaken in any type of Tiny / Micro / Small / Medium / Large, Manufacturing / Trading / Service Organisations. Maximum 25 Students shall be allotted to each Mentor. Minimum of THREE weeks of internship shall be undergone by the student and the Internship Certificate from the Organisation shall be enclosed with the report. The Report shall consist of Organisations Profile, Nature of Work undertaken by the student, Experience &Response of the student in about 25 pages. The Report on Internship shall be submitted within 45 days of commencement of VI semester. The related Marks & Credit will be awarded in the VI Semester.

V SEMESTER

	Subjects	Paper No.	Instruction hrs./week	Duration of Exam (hrs.)	Marks			Credits
					IA	Uni. Exam	Total	
Part 1 Optional	Income Tax -I	5.1	4	3	30	70	100	3
	Auditing & Corporate Governance	5.2	4	3	30	70	100	3
Part 2 Elective	ELECTIVE PAPER – 5.3 (From First Elective Group)	5.3	4	3	30	70	100	3
	ELECTIVE PAPER – 5.4 (From First Elective Group)	5.4	4	3	30	70	100	3
	ELECTIVE PAPER – 5.3 (From Second Elective Group)	5.5	4	3	30	70	100	3
	ELECTIVE PAPER – 5.4 (From Second Elective Group)	5.6	4	3	30	70	100	3
Part 3 Practicals	Practicals on Skill Development*****	5.7	2*****	2	50******	50******	100	3
Part 4	SDC/SEC: Community Service	-	-	-	100	-	100	3
	Ability Enhancement Compulsory Course		3	2	30	70	100	2
Total Credits								**26**

* One hour of Practical Class is equal to One hour of Theory Class and the class shall be managed by a Single teacher. Practical classes may be conducted in the Business Lab. or in Computer Lab. or in the Class Room depending on the requirement. Senior / Experienced / Concerned Subject Teachers may be allotted the practical work load.

** IA marks shall be awarded on the basis of Practical Records submitted by the student and on the basis of internal assessment test- 30 marks for practical record book + 10 marks for attendance +10 marks for test. (Practical Record Books shall be preferably evaluated by a teacher other than the concerned teacher within the department/college).University examination shall be conducted with a separate Question Paper.

INSTRUCTION: Dual Elective System shall be followed. Student shall have to opt any Two Elective Groups (2 +2 = 4 papers).

VI SEMESTER

	Subjects	Paper	Instruction hrs./week	Duration of Exam (hrs.)	Marks			Credits
					IA	Uni. Exam	Total	
Part 1 Optional	Income Tax – II	6.1	4	3	30	70	100	3
	Indian Accounting Standards and IFRS	6.2	4	3	30	70	100	3
Part 2 Elective	ELECTIVE PAPER – 6.3 (From First Elective Group)	6.3	4	3	30	70	100	3
	ELECTIVE PAPER – 6.4 (From First Elective Group)	6.4	4	3	30	70	100	3
	ELECTIVE PAPER – 6.3 (From Second Elective Group)	6.5	4	3	30	70	100	3
	ELECTIVE PAPER – 6.4 (From Second Elective Group)	6.6	4	3	30	70	100	3
Part 3 Practicals	Practicals on Skill Development*	6.7	2*	2	50**	50**	100	3
Part 4	SDC/SEC: Internship Programme	-	-	-	100	-	100	3
	Ability Enhancement Compulsory Course	-	3	2	30	70	100	2
Total Credits								**26**

* One hour of Practical Class is equal to One hour of Theory Class and the class shall be managed by a Single teacher. Practical classes may be conducted in the Business Lab. or in Computer Lab. or in the Class Room depending on the requirement. Senior / Experienced / Concerned Subject Teachers may be allotted the practical work load.

** IA marks shall be awarded on the basis of Practical Records submitted by the student and on the basis of internal assessment test- 30 marks for practical record book + 10 marks for attendance +10 marks for test. (Practical Record Books shall be preferably evaluated by a teacher other than the concerned teacher within the department/college).University examination shall be conducted with a separate Question Paper.

<u>INSTRUCTION</u>: Student shall have to continue with the SAME Elective Groups opted in the V Semester (2 + 2 = 4 papers).

ELECTIVE GROUPS

ACCOUNTING GROUP

Semester No.	Paper Code	Title of the Paper
V	AC. 5.3	Advanced Accounting
	AC.5.4	Methods & Techniques of Cost Accounting
VI	AC.6.3	Management Accounting
	AC.6.4	Accounting for Government & Local Bodies

FINANCE GROUP

Semester No.	Paper Code	Title of the Paper
V	FN.5.3	Advanced Financial Management
	FN.5.4	Financial Services
VI	FN.6.3	International Finance
	FN.6.4	Security Analysis & Portfolio Management

MARKETING GROUP

Semester No.	Paper Code	Title of the Paper
V	MK 5.3	Consumer Behaviour & Market Research
	MK 5.4	Digital Marketing
VI	MK 6.3	Customer Relationship Marketing
	MK 6.4	Logistic & Supply Chain Management

HUMAN RESOURCE GROUP

Semester No.	Paper Code	Title of the Paper
V	HR.5.3	Employee Welfare & Social Security
	HR.5.4	Strategic Human Resource Management
VI	HR.6.3	Organizational Change & Development
	HR.6.4	Compensation Management

BANKING GROUP

Semester No.	Paper Code	Title of the Paper
V	BK 5.3	Regulatory Framework of Banking
	BK 5.4	Marketing of Banking Products
VI	BK 6.3	E-Banking
	BK 6.4	Treasury & Forex Management

INFORMATION SYSTEMS GROUP

Semester No.	Paper Code	Title of the Paper
V	IS 5.3	ICT Applications in Business
	IS 5.4	Accounting Software
VI	IS 6.3	Cyber Law
	IS 6.4	DBMS & SQL

INTERNATIONAL FINANCE GROUP

Semester No.	Paper Code	Title of the Paper
V	IF 5.3	International Financial Management
	IF 5.4	Financial Performance Management
VI	IF 6.3	International Auditing & Assurance
	IF 6.4	Strategic Business Reporting

1. FOUNDATION COURSE / SKILL DEVELOPMENT / SKILL ENHANCEMENT COURSE (SEC) / ABILITY ENHANCEMENT COMPULSORY COURSE (AECC) / INTERDISCIPLINARY COURSES

❖ Common for all programmes, MCQ type of question paper shall be used, use of modern teaching aids and supply of study material is recommended.

- Constitution of Indian and Human Rights
- Environmental Science
- Computer Applications and Information Technology
- Business Entrepreneurship and Management
- Philosophy, Psychology and Life Skills
- Personality Development and Leadership
- Culture, Diversity and Society
- Research Methodology
- Education and Literacy / Science and Society
- Human Resource Development / Management
- Any one Foreign Language
- Commodity & Stock Market
- Mathematics in finance.
- Any other Course prescribed by the University from time to time

2. CO-CURRICULAR AND EXTENSION ACTIVITIES (CC& EA)

A student shall opt for any one of the following activities in the first four semesters offered in the college

- N.S.S / N.C.C./Rotary Activities / Rovers and Rangers
- Sports and Games / Activities related to Yoga
- A Small project work concerning the achievements of Indian in different fields
- Evolution of study groups/seminar circles on Indian thoughts and ideas
- Interaction with local communities in their neighborhood and learn about and from them
- Exploring different aspects of Indian civilizations
- Any other Co- curricular and Extra-curricular activities leading to Student Development as prescribed by the University.

Evaluation of Co-curricular and Extra Curricular Activities as per the procedure evolved by the University from time to time.

: FINANCIAL ACCOUNTING

LEARNING OBJECTIVE: The objective of this subject is to help the students to acquire Conceptual knowledge of the financial accounts and to impart skills for recording various kinds of Business transactions.

Unit 1: THEORETICAL FRAMEWORK OF FINANCIAL ACCOUNTING 08 Hrs

Introduction – Meaning and Definition – Significance of Accounting – Functions of Accounting– Users of Accounting Information - Accounting Principles – Accounting Concepts and Accounting Conventions- Accounting equations, Problems on Accounting Equations - Accounting Standards: List of Indian Accounting Standards.

Unit 2: CONVERSION OF SINGLE ENTRY INTO DOUBLE ENTRY SYSTEM 12 Hrs

Need for Conversion – steps in conversion- ascertainment of capital- total sales- total purchases – Cash and bank balances – stock – Bills Receivable – Bills payable –Preparation of Final accounts – Trading and Profit & Loss Account and Balance Sheet.

Unit 3: HIRE PURCHASE ACCOUNTING 12 Hrs

Meaning of Hire Purchase and Installment Purchase System- Hire Purchase v/s sale – differences between Hire Purchase and Installment system, meaning of Some important technical terms – 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 – Journal Entries and Ledger Accounts in the books of Hire Purchaser and Hire Vendor (Asset Accrual Method only and excluding repossession).

Unit 4: DEPARTMENTAL ACCOUNTS 10 Hrs

Meaning, Objectives, basis of apportionment of common expenses among different departments- Preparation of Trading and Profit and Loss Account in Columnar form-preparation of balance sheet in horizontal format – (Including Inter Departmental Transfers at cost price only).

Unit 5: BRANCH ACCOUNTS 10 Hrs

Introduction – Meaning – Objectives – Types of Branches - Dependent Branches – Features – Supply of Goods at Cost Price - Invoice Price – Branch Account in the books of Head Office (Debtors System Only)

BOOKS FOR REFERENCE

1. Arulanandam & Raman – Financial Accounting – I, HPH
2. Anil Kumar, Rajesh Kumar and Mariyappa, “Financial Accounting”, HPH
3. Dr. S.N. Maheswari: Financial Accounting, Vikas Publications
4. S P Jain and K. L. Narang: Financial Accounting- I, Kalyani Publishers
5. Radhaswamy and R.L. Gupta: Advanced Accounting , Sultan Chand
6. Dr.Janardhanan: Financial Accounting, Kalyani Publishers
7. Guruprasad Murthy: Financial Accounting, HPH
8. Soundarrajan & K. Venkataramana, Financial Accounting, SHBP.
9. Dr.Venkataraman & others (7 lecturers): Financial Accounting, VBH

: BUSINESS DYNAMICS AND ENTREPRENEURSHIP

LEARNING OBJECTIVE: The objective of this course is to help students to understand the conceptual framework of management and to know about the entrepreneurial culture and industrial growth to manage in 21st century organizations.

Unit 1: INTRODUCTION TO MANAGEMENT: 0**8 Hrs.**

Concept and Nature –Types of Managers- Responsibilities and skills of Professional Manager- Functions of Management – Fayol's Principles of Management – Administration vs. Management– Management Process – Levels of Management – Approaches to the study of Management - Challenges of managing 21st century Corporations/Organisations.

Unit 2: MANAGERIAL FUNCTIONS: **14 Hrs.**

Planning - Concept, Significance, Types; Organizing -Concept, Principles, Theories, Types of Organizations; Authority; Responsibility; Power; Delegation; Decentralization; Staffing; Directing; Coordinating; Control - Nature, Process, and Techniques.

Unit 3: HUMAN RESOURCE MANAGEMENT: 14 Hrs.

Meaning, Objectives, Functions, HRM Process, Job Analysis, Job Design, Recruitment, Selection, Placement, Training and Development, Retention of Employees, Performance Appraisal

Unit 4: INTRODUCTION TO ENTREPRENEURSHIP: **12 Hrs.**

Evolution of Entrepreneurship – Introduction to the concept of Entrepreneurs, Entrepreneurship and Enterprise - Reasons for growth of Entrepreneurship - Characteristics and Classification of Entrepreneurs – Intrapreneurs; Women Entrepreneurs - Problems and Challenges; Competency requirement for entrepreneurs

Unit 5: GOVERNMENT SUPPORT FOR ENTREPRENEURSHIP: 08 Hrs.

Start-up India, Make in India, Atal Innovation Mission (AIM), Support to Training and Employment Programme (STEP), Jan Dhan, Aadhaar, Mobile (JAM), Digital India, Trade Related Entrepreneurship Assistance and Development (TREAD), Pradhan Mantri Kausalya Vikasyojana (PMKVY), National Skill Development Mission (NSDM). (Concepts only)

BOOKS FOR REFERENCE

1. Hersey, Paul, Kenneth H. Blanchard and Dewey E. Johnson: Management of Organisational Behaviour: Utilising Human Resources, Prentice Hall, New Delhi.
2. Ivancevich; John and Micheeol T. Matheson: Organisational Behaviour and Management, Business Publication Inc., Texas.
3. Koontz, Harold, Cyril O'Donnell, and Heinz Weihrich: Essentials of Management, Tata McGraw-Hili, New Delhi. Luthans, Fred: Organizational Behaviour, McGraw-Hill, New York.
4. Govindarajan & Natarajan: Principles of Management, Prentice Hall of India Private Limited, New Delhi.
5. Tripathy & Reddy: Principles of Management, Tata McGraw-Hill Publications, New Delhi.
6. Tandon B.C: Environment and Entrepreneur; Chugh Publications, Allahabad.
7. Siner A David: Entrepreneurial Mega books; John Wiley and Sons, New York.
8. Srivastava S. B: A Practical Guide to Industrial Entrepreneurs; Sultan Chand and Sons, New Delhi.
9. Prasanna Chandra: Project Preparation, Appraisal, Implementation; Tata McGraw Hill, New Delhi

: INDIAN FINANCIAL INSTITUTIONS AND MARKETS

LEARNING OBJECTIVE: The objective of this course is to help students to understand the conceptual framework of Indian financial Institutions and markets and their operations.

Unit 1: BASICS OF INDIAN FINANCIAL SYSTEM **08 Hrs.**

Unit Meaning, Functions, Structure, Components – Financial Assets, Financial Institutions, Financial Markets, Financial Services

Unit 2: BANKING INSTITUTIONS **12 Hrs.**

Commercial Banks – Meaning, Definition, Classification, Role and Functions, Investment Norms

Unit 3: REGULATORY INSTITUTIONS **12 Hrs.**

Reserve Bank of India – Objectives, Functions & Monetary Policy – Credit Control Methods
Securities Exchange Board of India – Objectives, Functions & Powers

Unit 4: NON-BANKING FINANCIAL INSTITUTIONS **10 Hrs**

Meaning, Functions of IFCI, SFCs, IDBI, EXIM Bank, Mutual Funds, Payment Banks

Unit 5: FINANCIAL MARKETS **14 Hrs.**

Money Market – Meaning & Functions.
Capital Market – Meaning, Types – Primary Market, Secondary Market
Stock Exchange – Meaning, Features, Functions, Regulatory Framework – NSE, BSE, OTCEI, Meaning of important terms - online trading, stock brokers, insider trading, speculation, short selling in trade.

BOOKS FOR REFERENCE

1. Vasantha Desai: The Indian Financial System, HPH
2. G. Ramesh Babu; Indian Financial System. HPH
3. Dr. Bharatish Rao, B.R. Bharghavi – Indian Financial System, VBH
4. Meir Kohn: Financial Institutions and Markets, Tata McGraw Hill
5. Dr. Alice Mani: Indian Financial System, SBH.
6. L M Bhole: Financial Institutions and Markets, Tata Mc Graw Hill
7. M Y Khan: Indian Financial System, TMH
8. A Datta ; Indian Financial System, Excel Books
9. D.K. Murthy and Venugopal : Indian Financial System I.K. International Publishers
10. P N Varshney& D K Mittal: Indian Financial System, Sultan Chand & Sons
11. E Gardon & K Natarajan: Financial Markets & Services, HPH
12. S.C. Sharma and Monica : Indian Financial System I.K. International Publishers

: CORPORATE STRUCTURE AND ADMINISTRATION

LEARNING OBJECTIVE: The objective of this course is to enable the students to get familiarized with the existing Company Law and Company administration.

Unit 1: FORMATION OF A JOINT STOCK COMPANY **16 Hrs.**

Meaning, Definition and Features Joint Stock Companies, Kinds of Company (concepts only), Formation of a Company – Steps, Promotion Stage: Meaning of Promoter, Position of Promoter & Functions of Promoter; Incorporation Stage: Steps in incorporation of a company; Meaning & Contents of Memorandum of Association & Articles of Association, Distinction between Memorandum of Association and Articles of Association, Certificate of Incorporation; Subscription Stage – Meaning, Contents & Types of Prospectus; Commencement Stage – Document to be filed, e-filing; Registrar of Companies, Certificate of Commencement of Business.

Unit 2: CAPITAL OF A COMPANY **12 Hrs.**

Share Capital – Meaning of Shares – Kinds of Shares – Distinction between Equity & Preference shares; Debentures – Meaning – Features – Types; SEBI guidelines for issue of shares & debentures, Types of issue of Shares (concepts only), Book Building.

Unit 3: ADMINISTRATION OF A COMPANY **12 Hrs.**

Key Managerial Personnel – Managing Director, Whole time Directors, Company Secretary, Chief Financial Officer, Resident Director, Independent Director; Auditor – Appointment – Powers – Duties & Responsibilities; Managing Director – Appointment – Powers – Duties & Responsibilities; Audit Committee & CSR Committee, Company Secretary – Meaning, Qualification, Appointment, Duties and Liabilities.

Unit 4: CORPORATE MEETINGS **10 Hrs.**

Meaning and Definition – Requisites of a valid meeting - Types of Meeting: Statutory Meeting – Annual General Meeting – Extraordinary General Meeting – Board Meetings; Resolutions: Meaning and Types.

Unit 5: STRUCTURE AND ADMINISTRATION OF GLOBAL COMPANIES **06 Hrs.**

Meaning – Types – Features – Legal Formalities – Administration

BOOKS FOR REFERENCE

1. S.N Maheshwari; Elements of Corporate Law, HPH.
2. Balchandran – Business Law for Management HPH
3. Dr. B.G. Bhaskar, K.R. Mahesh Kumar – Corporate Administration, VBH
4. Dr. P.N. Reddy and H.R. Appanaiah: Essentials of Company Law and Secretarial Practice, HPH.
5. M.C. Shukla &Gulshan: Principles of Company Law.
6. K. Venkataramana, Corporate Administration, SHBP.
7. N.D. Kapoor: Company Law and Secretarial Practice, Sultan Chand.
8. C.L Bansal: Business and Corporate Law
9. M.C. Bhandari: Guide to Company Law Procedures, Wadhwa Publication.
10. S.C. Kuchal: Company Law and Secretarial Practice.
11. S.C. Sharma : Business Law, I.K. International Publishers
12. S.N Maheshwari ; Elements of Corporate Law, Vikas Publishers.

: PRACTICALS ON SKILL DEVELOPMENT

Unit 1: FINANCIAL ACCOUNTING

- List out any five accounting standards with formats
- Collection and recording of Hire Purchase Agreement.
- Collection & recording of financial data of Departmental store
- Collection of transactions relating to any branch and preparation of branch account
- Preparation of Departmental Profit & Loss Account and Balance Sheet with Imaginary Figures.
- Calculation of interest under different situations of Hire Purchase System.

Unit 2: BUSINESS DYNAMICS AND ENTREPRENEURSHIP

- Preparation of different types of organisational structure of select companies.
- Preparation of a brief case study of any recognized successful entrepreneur.
- Chart showing the process of PMKVY registration with PMKVY forms.
- Preparation of a list of Corporate Strategies adopted by select Indian Companies.
- Preparation of a Project report to start a SSI Unit.
- Format of a business plan.

Unit 3: INDIAN FINANCIAL INSTITUTIONS AND MARKETS

- Chart showing the structure of Indian Financial System.
- Structure of Commercial Banks in India.
- Organisational structure of RBI.
- Structure of Financial Markets in India.
- Specimen of Cheque with MICR technology.
- Draft the application forms for opening a Fixed, Current and Savings Bank Accounts.

Unit 4: CORPORATE STRUCTURE AND ADMINISTRATION

- Drafting of Memorandum of Association, Drafting Articles of Association.
- Drafting Notice of Company Meetings – Annual, Special, Extraordinary and Board meetings.
- Drafting Resolutions of various meetings – different types.
- Chart showing Company's Organization Structure.
- Chart showing kinds of Companies.
- Preparation of prospectus of a company.

: ADVANCED FINANCIAL ACCOUNTING

LEARNING OBJECTIVE: The objective of this course is to make the students familiar with the accounting procedures for different types of businesses and to impart skills for recording various kinds of business transactions.

Unit 1: FIRE INSURANCE ACCOUNTING **12 Hrs.**

Introduction – Need – Loss of Stock Policy – Steps for Ascertaining Fire Insurance Claim – Treatment of Salvage – Average Clause – Treatment of Abnormal Items – Computation of Fire Insurance Claims.

Unit 2: CONSIGNMENT ACCOUNTS **12 Hrs.**

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.

Unit 3: ACCOUNTING FOR JOINT VENTURES **12 Hrs.**

Introduction – Meaning – Objectives – Distinction between Joint Venture and Consignment – Distinction between Joint Venture and Partnership – Maintenance of Accounts in the books of co-ventures – Maintaining Separate Books for Joint Venture – Preparation of Memorandum Joint Venture - Problems.

Unit 4: ROYALTY ACCOUNTS **12 Hrs.**

Meaning and definition – Technical Terms – Royalty – Landlord – Tenant – Minimum Rent – Short Workings – Recoupment of Short Working under (Fixed Period) restrictive and non-restrictive (Floating Period) Recoupment within the Life of the Lease – Treatment of Strike and Stoppage of work – Accounting Treatment in the books of Lessee and lessor – journal entries and Ledger Accounts including minimum rent account.

Unit 5: CONVERSION OF PARTNERSHIP FIRM INTO A LIMITED COMPANY **12 Hrs.**

Meaning – Objectives of Conversion - Purchase Consideration – Methods of Calculation of Purchase Consideration -Mode of Discharge of Purchase Consideration - Lump Sum Method- Net Assets Method - Net Payment Method -Ledger Accounts in the Books of Vendor – Incorporation Entries in the Books of Purchasing Company, Preparation of Balance Sheet in Vertical form.

BOOKS FOR REFERENCE:

1. Arulanandam & Raman; Advanced Accountancy, HPH
2. Anil Kumar, Rajesh Kumar and Mariyappa, Advanced Financial Accounting, HPH
3. Dr. Alice Mani: Advanced Financial Accenting, SBH.
4. Dr. S.N. Maheswari, Financial Accounting, Vikas Publication
5. S P Jain and K. L. Narang, Financial Accounting, Kalyani Publication
6. Souandrajan & K. Venkataramana, Financial Accounting, SHBP.
7. A Bannerjee; Financial Accounting.
8. Dr.Janardhanan: Advanced Financial Accounting, Kalyani Publishers
9. Radhaswamy and R.L. Gupta, Advanced Accounting, Sultan Chand
10. M.C. Shukla and Grewel, Advanced Accounting.

: BANKING OPERATIONS AND INNOVATIONS

LEARNING OBJECTIVE: The objective of this course is to familiarize the students with the operations and innovations in Banking Sector.

Unit 1: BANKER AND CUSTOMER **16 Hrs.**

A). Banker and Customer Relationship

Introduction – Meaning of Banker& Customer; General and Special relationships between Banker & Customer, (Rights and Obligations of Banker & Customer).

B). Customers and Account Holders

Types of Customer and Account Holders – Procedure and Practice in opening and operating the accounts of different types of customers – Minor, Joint Account Holders, Partnership Firms, Joint Stock Companies, Clubs, Non-Resident Account – NRI & NRE Accounts.

Unit 2: COLLECTING BANKER **08 Hrs.**

Meaning – Duties and Responsibilities of Collecting Banker, Holder for Value, Holder in Due Course; Statutory Protection to Collecting Banker.

Unit 3: PAYING BANKER **12 Hrs.**

Meaning – Precautions – Statutory Protection to the Paying Banker; Cheques – Crossing of Cheques – Types of Crossing; Endorsements - Meaning, Essentials and Kinds of Endorsement; Dishonor of Cheque - Grounds for Dishonor.

Unit 4: LENDING OPERATIONS **12 Hrs.**

Principles of Bank Lending, Kinds of lending - Loans, Cash Credit, Overdraft, Bills Discounting, Letters of Credit. Types of securities and Methods of creation of charge, Secured and Unsecured Advances; Procedure - Housing, Education and Vehicle loan's; Non-Performing Asset (NPA): Meaning, circumstances & impact; Government Regulations on Priority lending for commercial banks.

Unit 5: BANKING INNOVATIONS **08 Hrs.**

New Technology in banking, Core Banking, Universal Banking and Offshore Banking; E-Services – Debit and Credit Cards - Internet Banking – ATM - Electronic Fund Transfer (NEFT, RTGS, IMPS), DEMAT, E-Wallet – Meaning, Types of E-Wallet's &Procedure of making E-Payments: BHIM, PAYTM, GOOGLE PAY (TEZ), PHONE PE (Concepts only)

BOOKS FOR REFERENCE:

1. Gordon & Natarajan: Banking Theory Law and Practice, HPH
2. S. P Srivastava ; Banking Theory & Practice, Anmol Publications
3. M. Prakhas, Bhargabhi R: Banking law & Operation, Vision Book House.
4. Tannan M.L: Banking Law and Practice in India, Indian Law House
5. Sheldon H.P: Practice and Law of Banking.
6. K. Venkataramana, Banking Operations, SHBP.
7. Kothari N. M: Law and Practice of Banking.
8. Neelam C Gulati: Principles of Banking Management.
9. Maheshwari. S.N.: Banking Law and Practice, Vikas Publication
10. Shekar. K.C: Banking Theory Law and Practice, Vikas Publication.
11. S. Vipradas & j. K Syan: Bank Lending
12. Gajendra&Poddar : Law and Practice of Banking
13. Dr. Alice Mani: Banking Law and Operation, SBH.

: MODERN MARKETING

LEARNING OBJECTIVE: The objective of this course is to familiarize the students with the concepts, dimensions and trends in modern marketing practices

Unit 1: INTRODUCTION TO MARKETING **16 Hrs.**

Meaning and Definition, Goals, Concepts of Marketing, Approaches to Marketing, Functions of Marketing, Recent trends in Marketing – Green Marketing and Grey Marketing, Retailing, Relationship Marketing, Customer Relationship Marketing and Social Marketing.

Unit 2: MARKETING ENVIRONMENT **08 Hrs.**

Types of Environments - Demographic, Economic, Natural, Political, Legal and Socio-Cultural Environments. Market Segmentation – Meaning and Definition, Basis of Market Segmentation, Consumer Behaviour – Factors influencing Consumer Behaviour.

Unit 3: MARKETING MIX **12 Hrs.**

Meaning and Elements, Product, Product Mix, Product Line, Product Life Cycle, Product Planning, New Product Development, Branding, Packing and Packaging, Pricing – Factors Influencing Pricing - Methods of Pricing (meanings) and Pricing Policy, Physical Distribution – Meaning - Factors affecting Channels of distribution - Types of Marketing Channels, Promotion – Meaning and Significance of Promotion - Personal Selling and Advertising.

Unit 4: DIGITAL MARKETING **12 Hrs.**

Introduction, Features, Process of Digital Marketing, advantages and disadvantages, E-Marketing, Mobile Marketing, Market Disruption caused by Digital Marketing, Challenges and Suitability of Digital Marketing in India.

Unit 5: SERVICES MARKETING **08 Hrs.**

Meaning of Services, Characteristics of Services, Classification of Services, Marketing of Services, Difference between Products and Services Marketing, Challenges of Services Marketing, Marketing Mix in Service Industry, Growth of Services Sector in India.

BOOKS FOR REFERENCE:

1. Philip Kotler - Marketing Management, PHI.
2. Davar: Marketing Management.
3. Rekha. M.P. &Vibha V – Marketing & Services Mgt – VBH.
4. Sunil B. Rao - Marketing & Services Mgt – HPH.
5. Janardhan T.G., Leelavathy AM, Bhagya G.B. – Marketing & Service Management, Kalyani Pub.
6. Dr. Alice Mani: Marketing & Services Management, SBH.
7. J.C. Gandhi - Marketing Management, TMH
8. Stanton W.J. etzal Michael & Walker, Fundamentals of Management, TMH
9. Jayachandran ; Marketing Management. Excel Books.
10. K. Venkatramana, Marketing Management, SHBP.
11. P N Reddy &Appanniah, Essentials of Marketing Management, HPH
12. Sontakki, Marketing Management, HPH
13. K. Karunakaran; Marketing Management, HPH.
14. Ramesh and Jayanthi Prasad : Marketing Management I.K. International Publishers

: METHODS AND TECHNIQUES FOR BUSINESS DATA ANALYSIS

LEARNING OBJECTIVE: The objective of this course is to provide basic knowledge of mathematics and their application in business

Unit 1: NUMBER SYSTEM **04 Hrs.**

Introduction – Natural numbers, Even numbers, Odd numbers, Integers, Prime numbers, Rational & Irrational numbers, Real numbers, HCF & LCM (Simple problems).

Unit 2: THEORY OF EQUATIONS **10 Hrs.**

Introduction – Meaning - Types of Equations – Simple/ Linear Equations and Simultaneous Equations (only two variables), Elimination and Substitution Methods only. Quadratic Equation - Factorization and Formula Method ($ax^2 + bx + c = 0$ form only). Simple problems

Unit 3: MATRICES, INDICES AND LOGARITHMS **16 Hrs.**

Meaning – types – operation on matrices – additions – subtractions and multiplication of two matrices – transpose – determinants – minor of an element – co-factor of an element –inverse – crammers rule in two variables – problems.

Indices and Logarithms: Meaning- Basic Laws of Indices and their application for simplification. Laws of Logarithms – Common Logarithm, Application of Log Table for Simplification

Unit 4: COMMERCIAL ARITHMETIC **16 Hrs.**

Simple Interest, Compound Interest including yearly and half yearly calculations, Annuities, Percentages, Bills Discounting, Ratios and proportions, duplicate-triplicate and sub-duplicate of a ratio. Proportions: third, fourth and inverse proportion - problems.

Unit 5: PROGRESSIONS **10 Hrs.**

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 of GP and insertion of Geometric Mean

BOOKS FOR REFERENCE:

1. Dr. Sancheti & Kapoor: Business Mathematics and Statistics, Sultan Chand
2. Madappa, Mahadi Hassan, M. Iqbal Taiyab – Business Mathematics, Subhash Publications
3. Saha: Mathematics for Cost Accountants, Central Publishers
4. R.G. Saha & Others – Methods & Techniques for Business Decisions, VBH
5. Zamarudeen: Business Mathematics, Vikas Publishers.
6. R.S Bhardwaj : Mathematics for Economics & Business
7. G.R. Veena and Seema: Business Mathematics and Statistics I.K. Intl Publishers

: PRACTICALS ON SKILL DEVELOPMENT

Unit 1: ADVANCED FINANCIAL ACCOUNTING

- Preparation of a claim statement with imaginary figures to submit to Insurance Company.
- Preparation of Consignment account with imaginary figures
- List the types of business which comes under consignment.
- Preparation of Joint Venture Agreement
- Collection & recording of Royalty agreement with regard to any suitable situation
- Preparation of list of items which comes under Royalty accounts

Unit 2: BANKING OPERATIONS AND INNOVATIONS

- Application for opening a Bank Account.
- Application for Bank Loan.
- Form of a Cheque and Types of Crossing of Cheque
- Debit and Credit Cards
- Form of RTGS
- Draw specimen of Traveler's Cheques / Gift cheques

Unit 3: MODERN MARKETING

- Suggest strategies for development of a new product.
- Study of Consumer Behaviour for a product of your choice.
- Develop an Advertisement copy for a product.
- Prepare a chart for distribution network for different products.
- SWOC (Strengths, Weakness, Opportunities & Challenges) – of Digital Marketing
- Structure of Point of Sale System, E-Way Bill, Fast Tag & Wireless Swiping Machines.

Unit 4: METHODS AND TECHNIQUES FOR BUSINESS DATA ANALYSIS

- Secondary overhead distribution summary using Simultaneous Equations Method.
- Use of Matrices in various fields like Railway Reservation, CET Counselling, KSRTC.
- Interest calculation of various Deposits (both simple and compound)
- Calculation of interest on various Loans (both Fixed and Fluctuating)
- Preparation and Amortization Table for Loan Amount – EMI calculation
- Presentation & Progression of Food Supply and Population of different States (A.P./G.P)

CORPORATE ACCOUNTING

LEARNING OBJECTIVE: The objective of this subject is to familiarize students with accounting provisions under Companies Act and their application.

Unit 1: ISSUE OF SHARES AND DEBENTURES **14 Hrs.**

Share Capital: Subdivision of Share Capital; Issue of Shares, Pricing of Public Issue – Fixed Price Offer Method, Book-building Method; Journal entries for Issue of Shares - when payable fully on application and when payable in instalments - if shares are issued at par, at premium and at discount. Calls-in-arrears and Calls-in-advance. Forfeiture and Re-issue of Shares.

Debentures: Meaning & Types of Debentures; Provisions for Issue of Debentures under Companies Act, 2013. Accounting entries for issue of Debentures – when payable fully on application and when payable in instalments; Issue of Debentures other than for Cash; Issue of Debentures as collateral security for loan.

Unit 2: UNDERWRITING OF SHARES AND DEBENTURES **08 Hrs.**

Meaning of Underwriting – SEBI regulations regarding underwriting; Underwriting commission. Types of underwriting agreement – conditional and firm; Determination of Liability in respect of underwriting contract – when fully underwritten and partially underwritten – with and without firm underwriting.

Unit 3: FINANCIAL STATEMENTS OF COMPANIES **16 Hrs**.

Components of Financial Statements – Statement of Profit and Loss and Balance Sheet. Schedule III of Companies Act, 2013 – Main features of Schedule III – Format and Content of Statement and Profit and Loss & Balance Sheet according to Schedule III. Problems on preparation of Financial Statements. Treatment for typical adjustments – depreciation, interest on debentures, tax deducted at source, advance payment of income tax, provision for taxation, and dividends.

Unit 4: VALUATION OF GOODWILL AND SHARES **12 Hrs.**

Valuation of Goodwill: Meaning – Circumstances of Valuation of Goodwill – Factors influencing the value of Goodwill – Methods of Valuation of Goodwill: Average Profit Method, Super Profit Method, Capitalisation of average Profit Method, Capitalization of Super Profit Method, and Annuity Method - Problems. Valuation of Shares: Meaning – Need for Valuation – Factors Affecting Valuation – Methods of Valuation: Intrinsic Value Method, Fair Value Method and Yield Method - Problems.

Unit 5: MANAGERIAL REMUNERATION **06 Hrs.**

Meaning – Provisions under Schedule V of Companies Act regarding Managerial Remuneration. Overall maximum managerial remuneration, Calculation of Net Profits for Managerial Remuneration. Simple Problems on calculation of remuneration payable.

BOOKS FOR REFERENCE:

1. Hanif and Mukherjee, Corporate Accounting, Mc Graw Hill Publishers
2. S P Jain and K. L. Narang, Financial Accounting, Kalyani Publication
3. Dr. S Anil Kumar, Dr. V Rajesh Kumar and Dr. B Mariyappa, Corporate Accounting, HPH
4. Dr. S.N. Maheswari, Financial Accounting, Vikas Publication
5. Soundrajan & K. Venkataramana, Financial Accounting, SHBP.
6. A Bannerjee; Financial Accounting.
7. Dr. Janardhanam: Advanced Financial Accounting, Kalyani Publishers
8. Radhaswamy and R.L. Gupta, Advanced Accounting, Sultan Chand
9. M.C. Shukla and Grewal, Advanced Accounting.

FINANCIAL MANAGEMENT

LEARNING OBJECTIVE: The objective is to enable students to understand the basic concepts of Financial Management and the role of Financial Management in decision-making.

Unit 1: INTRODUCTION TO FINANCIAL MANAGEMENT **08 Hrs.**

Introduction – Meaning of Finance – Business Finance – Finance Functions – Organization structure of Finance Department - Financial Management – Goals of Financial Management – Financial Decisions – Role of a Financial Manager – Financial Planning – Steps in Financial Planning – Principles of Sound Financial Planning – Factors influencing a sound financial plan.

Unit 2: TIME VALUE OF MONEY **08 Hrs.**

Meaning, Need, Future Value (Single Flow – Uneven Flow & Annuity) – Present Value (Single Flow – Uneven Flow & Annuity)– Doubling Period – Concept of Valuation: Valuation of Bonds, Debentures and shares. Simple Problems.

Unit 3: FINANCING & DIVIDEND DECISIONS **14 Hrs.**

Financing Decision: Sources of Long Term Finance – Meaning of Capital Structure, Factors influencing Capital Structure, Optimum Capital Structure – EBIT, EPS Analysis, Leverages – Problems.
Dividend Decision: Meaning & Determinants of Dividend Policy, Types of Dividends, Bonus shares (Meaning only). SEBI Guidelines on dividend distribution.

Unit 4: INVESTMENT DECISION **16 Hrs.**

Meaning and Scope of Capital Budgeting, Features & Significance, Techniques: Payback Period, Accounting Rate of Return, Net Present Value, Internal Rate of Return and profitability index. Problems.

Unit 5: WORKING CAPITAL MANAGEMENT **10 Hrs.**

Concept of Working Capital, Significance of Adequate Working Capital, Types of Working Capital, Problems of Excess or Inadequate Working Capital, Determinants of Working Capital, Sources of Working Capital, Estimation of Working Capital (Simple Problems).

BOOKS FOR REFERENCE

1. S N Maheshwari, Financial Management, Sultan Chand
2. I M Pandey, Financial Management. Vikas Publication.(1)
3. Prasanna Chandra, Financial Management, TMH(2)
4. Khan and Jain, Financial Management, TMH
5. Dr. V Rajeshkumar and Nagaraju V - Financial management MH India
6. Dr. Aswathanarayana.T – Financial Management, VBH
7. K. Venkataramana, Financial Management, SHBP.
8. G. Sudarshan Reddy, Financial Management, HPH
9. Sharma and Sashi Gupta, Financial Management, Kalyani Publication.
10. P.K Simha – Financial Management.
11. Dr. Alice Mani: Financial Management, SBH.

: BUSINESS REGULATIONS

LEARNING OBJECTIVE: To introduce the students to the various business regulations and to familiarize them with common issues of relevance.

Unit 1: CONTRACT LAW **16 Hrs.**

Indian Contract Act 1872 – Definition of Contract, Essentials of Valid Contract, Classification of Contract, Breach of Contract and Remedies to Breach of Contract.

Unit 2: LAW OF SALE OF GOODS **10 Hrs.**

Indian Sale of Goods Act 1930- Definition of Contract of Sale, Essentials of Contract of Sale, Conditions and Warranties, Rights and Duties of the Buyer, Rights of an Unpaid Seller.

Unit 3: COMPETITION AND CONSUMER LAWS **14 Hrs.**

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 – Definitions of the terms – Consumer, Consumer Dispute, Defect, Deficiency, Unfair Trade Practices, and Services, Rights of Consumer under the Act, Consumer Redressal Agencies – District Forum, State Commission and National Commission.

Unit 4: ECONOMIC LAWS **10 Hrs.**

WTO patent rules – **Indian Patent Act, 1970** – Meaning and Scope of Intellectual Property Rights (IPR), Procedure to get Patent for Inventions and Non-Inventions.

FEMA 1999 – Objectives of FEMA, Salient Features of FEMA, Definition of Important Terms – Authorized Dealer, Currency - Foreign Currency, Foreign Exchange, Foreign Security.

Unit 5: ENVIRONMENT AND CYBER LAWS **06 Hrs.**

Environment Protection Act 1986 – Objectives of the Act, Definitions of Important Terms – Environment, Environment Pollutant, Environment Pollution, Hazardous Substance and Occupier, Types of Pollution, Powers of Central Government to protect Environment in India.

Cyber Law: Definition, Introduction to Indian Cyber Law, Cyber space and Cyber security

BOOKS FOR REFERENCE:

1. N.D. Kapoor, Business Laws, Sultan Chand Publications
2. K. Aswathappa, Business Laws, HPH,
3. Information Technology Act/Rules 2000, Taxmann Publications Pvt. Ltd.
4. Chanda.P.R, Business Laws, Galgotia Publishing Company
5. Maheshwari and Maheshwari, Business Law, National Publishing House
6. S.C. Sharma: Business Law I.K. International Publishers
7. Lee Reach, Business Laws, Oxford University Press
8. Tulsian. P. C Business Law, TMH

BUSINESS DATA ANALYSIS

LEARNING OBJECTIVE: The objective of this subject is to help the students to acquire knowledge on the various statistical tools used for data analysis that can be applied in Business.

Unit 1: INTRODUCTION TO STATISTICS **12 Hrs.**

Introduction – Meaning, Functions and Uses of Statistics; **Collection of Data -** Techniques of Data Collection – Census Technique and Sampling Technique (Concepts). **Classification**: Meaning, and Methods of Classification of Data, **Tabulation**: Meaning, Parts of a Table – Simple problems on Tabulation; **Diagrammatic Presentation:** Bar Diagrams – Simple Bars, Multiple Bars, Percentage Sub-divided Bar Diagram; Two Dimensional Diagrams – Pie Diagram.

Unit 2: MEASURES OF CENTRAL TENDENCY AND DISPERSION **18 Hrs.**

Measures of Central Tendency: **Arithmetic Mean:** Calculation of Arithmetic Mean for Individual, Discrete and Continuous Series – Problems using Direct Method.

Median: Calculation of Median for Individual, Discrete and Continuous Series

Mode: Calculation of Mode for Individual, Discrete and Continuous Series using Inspection method (Excluding problems using Grouping Tables), Empirical relation between Mean, Median and Mode.

Measures of Dispersion: Calculation of Standard Deviation and Coefficient of Variation in Individual, Discrete and Continuous Series – Problems using Direct Method.

Measures of Skewness: Calculation of Karl Pearson's co-efficient of Skewness (Uni-modal)

Unit 3: CORRELATION AND REGRESSION ANALYSIS **12 Hrs.**

Correlation Analysis - Meaning, Types of Correlation, Calculation of Karl Pearson's Coefficient of Correlation in individual series – Problems using Direct Method only; Computation of Probable Error.

Regression Analysis – Meaning of Regression, Estimation of X and Y values using Regression Equations when regression coefficients are given.

Unit 4: TIME SERIES ANALYSIS **06 Hrs**.

Meaning, Components, Fitting a straight-line trend using Least Square Method (Problems where $\Sigma X=0$ only), calculation and estimation of trend values.

Unit 5: INTERPOLATION AND EXTRAPOLATION **08 Hrs**.

Meaning, Assumptions, Methods of Interpolation – Binomial Expansion Method with one or two missing values, Newton's Advancing Differences Method (Problems on one missing value using maximum five X values)

BOOKS FOR REFERENCE

1. S P Gupta: Statistical Methods- Sultan Chand
2. Dr. B N Gupta: Statistics, Sahithya Bhavan
3. S.C Gupta: Business Statistics, HPH
4. N.V.R Naidu: Operation Research I.K. International Publishers
5. Elhance: Statistical Methods, Kitab Mahal
6. Sanchethi and Kapoor: Business Mathematics, Sultan Chand
7. Veerachamy: Operation Research I.K. International Publishers
8. S. Jayashankar: Quantitative Techniques for Management
9. D.P Apte; Statistical Tools for Managers
10. Chikoddi & Satya Prasad: Quantitative Analysis for Business Decision, HPH
11. Dr. Alice Mani: Quantitative Analysis for Business Decisions - I, SBH

PRACTICALS ON SKILL DEVELOPMENT

Unit 1: CORPORATE ACCOUNTING

- Compile the list of Indian companies which have issued shares through IPO / FPO in the current financial year.
- Determine Underwriters' Liability in case of an IPO, with imaginary figures.
- Present the format of 'Statement of Profit and Loss', 'Balance Sheet' and 'Statement of Changes in Equity', with imaginary figures.
- Collect financial statement of a company and calculate intrinsic value of an equity share.
- Show the calculation of 'Managerial Remuneration' with imaginary data.

Unit 2: FINANCIAL MANAGEMENT

- Draw the Organisational Structure of Finance Department of any Indian company.
- Show the calculation of Future Value and Present Value for Annuity and Perpetuity using imaginary data.
- Demonstrate EBIT-EPS Analysis with imaginary figures and calculate all leverages.
- Identify atleast five companies which have issued bonus shares recently.
- Estimate the working capital for a manufacturing company using imaginary figures.

Unit 3: BUSINESS REGULATIONS

- Discuss the case of "Carlill vs Carbolic Smoke Ball Company" case
- Discuss the case of "Mohori Bibee v/s Dharmodas Ghose".
- Discuss any one case law relating to minor.
- State the procedure for getting patent for 'inventions' and / or 'non-inventions'.
- List at least 5 items which can be categorised as 'hazardous substance' according to Environment Protection Act.

Unit 4: BUSINESS DATA ANALYSIS

- Draw a bi-variate table using imaginary data.
- For imaginary data of 50 Students' marks in 'Business Data Analysis', compute measures of central tendency.
- For imaginary data of any two variables, calculate 'co-efficient of correlation'.
- Collect the sales data of a company for 9 years and estimate the trend values.
- Based on imaginary 5-years' data of 'production' or 'sales' of a company, extrapolate the value of variable for next year.

: ADVANCED CORPORATE ACCOUNTING

LEARNING OBJECTIVE: The objective of this subject is to make the students familiar with the accounting provisions under Companies Act, 2013 and as per Accounting Standards.

Unit 1: REDEMPTION OF PREFERENCE SHARES 10 Hrs.

Provisions for Issue and Redemption of Preference Shares under Companies Act, 2013; Conditions for Redemption of Preference Shares; Methods of Redemption – Out of Fresh issue of Shares, out of Capitalization of Undistributed Profits; and out of Combination of Fresh Issue and Capitalization of Undistributed Profits. Treatment for Premium on Redemption and Capital Redemption Reserve – Problems.

Unit 2: REDEMPTION OF DEBENTURES 14 Hrs.

Meaning of Redemption of Debentures; Rules for Redemption of Debentures; Accounting Entries for Redemption of Debentures – when there is no Sinking Fund and when there is Sinking Fund – if Redemption is by Payment of Lump Sum, by Payment in Annual Instalments, by Purchase in Open Market and by Conversion into Shares.

U**nit 3: AMALGAMATION OF COMPANIES 16 Hrs**.

Introduction – Meaning of Amalgamation; Types of Amalgamation – Amalgamation in the nature of Merger and Amalgamation in the nature of Purchase; Calculation of Purchase Consideration; Methods of Accounting for Amalgamation – Problems on Pooling of Interests Method and Purchase Method, Journal Entries in the books of Purchasing Company.

Unit 4: INTERNAL RECONSTRUCTION AND CAPITAL REDUCTION 12 Hrs.

Meaning of Capital Reduction; Objectives of Capital Reduction; Provisions for Reduction of Share Capital under Companies Act, 2013. Forms of Reduction. Accounting for Capital Reduction. Problems on passing Journal Entries, preparation of Capital Reduction Account and Balance sheet after reduction.

Unit 5: LIQUIDATION OF COMPANIES 8 Hrs.

Meaning of Liquidation/Winding up, Modes of Winding up – Compulsory Winding up, Voluntary Winding up and Winding up subject to Supervision by Court. Statement of Affairs, Order of payments in the event of Liquidation. Liquidator's Statement of Account. Liquidator's remuneration. Problems on preparation of Liquidator's Statement of Account.

BOOKS FOR REFERENCE:

1. Hanif and Mukherjee, Corporate Accounting, Mc Graw Hill Publishers
2. S P Jain and K. L. Narang, Financial Accounting, Kalyani Publication
3. Dr. S Anil Kumar, Dr. V Rajesh Kumar & Dr. B Mariyappa, Advanced Corporate Accounting, HPH
4. Dr. S.N. Maheswari, Financial Accounting, Vikas Publication
5. Soundrajan & K. Venkataramana, Financial Accounting, SHBP.
6. A Bannerjee; Financial Accounting.
7. Dr. Janardhanam: Advanced Financial Accounting, Kalyani Publishers
8. Radhaswamy and R.L. Gupta, Advanced Accounting, Sultan Chand
9. M.C. Shukla and Grewal, Advanced Accounting.

: GOODS AND SERVICES TAX

LEARNING OBJECTIVES: To impart students with knowledge on tax, types of tax and their modalities, to give insight on the taxes influencing a corporate entity – both direct and indirect, and to orient the students on the procedures and formalities to be adhered, with regard to tax matters.

Unit 1: BASICS OF TAXATION **4 Hrs.**

Tax – Meaning and Types, Differences between Direct and Indirect Taxation, Brief History of Indirect Taxation in India, Structure of Indian Taxation.

Unit 2: GOODS AND SERVICES TAX –FRAMEWORK AND DEFINITIONS **12 Hrs.**

Introduction to Goods and Services Tax, Constitutional Framework, Orientation to CGST, SGST and IGST, Meaning and Scope of Supply, Types of Supply. Exemptions from GST

Unit 3: TIME, PLACE AND VALUE OF SUPPLY **20 Hrs.**

Time of Supply – in case of Goods and in case of Services - Problems on ascertaining Time of Supply; Place of Supply – in case of Goods and in case of Services (both General and Specific Services) – Problems on Identification of Place of Supply; Value of Supply – Meaning, Inclusions and Exclusions. Problems on calculation of 'Value of Supply'

Unit 4: GST LIABILITY AND INPUT TAX CREDIT **14 Hrs.**

Rates of GST – Classification of Goods and Services and Rates based on classification, Problems on computation of GST Liability. Input Tax Credit – Meaning, Process for availing Input Tax Credit – Problems on calculation of Input Tax Credit and Net GST Liability.

Unit 5: GST PROCEDURES **06 Hrs.**

Registration under GST, Tax Invoice, Levy and Collection of GST, Composition Scheme, Due dates for Payment of GST, Accounting record for GST, Features of GST in Tally Package. GST Returns – Types of Returns, Monthly Returns, Annual Return and Final Return – Due dates for filing of returns. Final Assessment. Accounts and Audit under GST.

BOOKS FOR REFERENCE:

1. V Rajesh Kumar and Mahadev, "Indirect Taxes", Mc Graw Hill Education
2. Datey, V S, "Indirect Taxes", Taxmann Publications.
3. Hiregange et al, "Indirect Taxes:, Puliani and Puliani.
4. Haldia, Arpit, "GST Made Easy", Taxmann Publications.
5. Chaudhary, Dalmia, Girdharwal, "GST – A Practical Approach", Taxmann Publications.
6. Garg, Kamal, "Understanding GST", Bharat Publications.
7. Hiregange, Jain and Naik, "Students' Handbook on Goods and Services Tax", Puliani and Puliani.

COST ACCOUNTING

LEARNING OBJECTIVES: The objective of this course is to familiarise the students with the cost accounting concepts and their applicability in organisations for the purpose of decision making on cost reduction and efficiency improvement.

Unit 1: INTRODUCTION TO COST ACCOUNTING 14 Hrs

Meaning, Objectives, Importance and Uses of Cost Accounting, Functions of Cost Accounting Department in an Organisation, Difference between Cost Accounting and Financial Accounting; Various Elements of Cost and Classification of Cost; Cost object, Cost unit, Cost driver, Responsibility centres; Cost reduction and Cost control; Methods and Techniques of Costing (Meanings Only); Use of IT in Cost Accounting; Limitations of Cost Accounting; **Cost Sheet:** Meaning and Cost heads in a Cost Sheet, Presentation of Cost Information in Cost Sheet / Statement - Problems on Cost Sheet, Tenders and Quotations.

Unit 2: MATERIALS COST 12 Hrs.

Materials: Meaning, Importance and Types of Materials – Direct and Indirect Material

Materials procurement: Procedure for procurement of materials and documentation involved in procurement of materials – **(**Bill of materials, Material requisition note, Purchase requisition note, Purchase order, Goods received note); **Material Storage and Records:** Duties of Store keeper, Store records- (Bin card, Stores Ledger, Stock Control Cards); **Material Issues and Valuation:** Procedure for material issues**,** documents used in material issues – (Material Requisition Note, Material Transfer Note, Materials Return Note); Valuation of material issues – preparation of Stores Ledger/ Account – FIFO, LIFO, Simple Average Price and Weighted Average Price Methods – Problems. **Inventory Control:** Inventory control techniques and determination of various stock levels – Problems on level setting and computation of EOQ; ABC Analysis, FSN Inventory, VED Inventory, HML Inventory, Physical Control- KANBAN, JIT Inventory Management Technique, Perpetual Inventory system (Concepts only).

Unit 3: EMPLOYEE COST 8 Hrs.

Employee Cost: Meaning, Components, Classification and Importance of Employee (Labour) Cost in Organisations; **Attendance Procedure** – Time keeping and Time booking, Idle time – Causes and Treatment of Normal and Abnormal Idle time, Overtime- Causes and Treatment (Theory Only); **Methods of Remuneration (Payment of Wages and Incentives)** Problems on calculation of earnings under Time Rate (Straight Time Rate, Halsey and Rowan Methods) and Piece Rate Systems (Straight Piece Rate and Taylor's Differential Piece Rate); **Employee Turnover** – Meaning, Reasons and Effects of LTO/ETO

Unit 4: OVERHEADS 14 Hrs.

Overheads: Meaning and Classification of Overheads; Accounting and Control of Manufacturing Overheads: Estimation and Collection, Cost Allocation, Apportionment, Re-apportionment and Absorption of Manufacturing Overheads; Problems on Primary and Secondary distribution using Reciprocal Service Methods (Repeated Distribution Method and Simultaneous Equation Method); Absorption of Overheads: Meaning and Methods of Absorption of Overheads; Problems on Machine Hour Rate.

Unit 5: RECONCILIATION OF COST AND FINANCIAL ACCOUNTS 8 Hrs.

Reasons for differences in Profits under Financial and Cost Accounts; Procedure for Reconciliation – Ascertainment of Profits as per Financial Accounts and Cost Accounts and Reconciliation of Profits of both sets of Accounts – Preparation of Reconciliation Statement – Problems.

BOOKS FOR RERFERENCE

1. Jain and Narang. Cost Accounting, Kalyani Publication House
2. M.N Arora Cost Accounting , HPH
3. M.V. Shukla – Cost and Management Accounting
4. N.K. Prasad: Cost Accounting, Books Syndicate Pvt. Ltd.
5. Dr. V Rajeshkumar, Dr. R K Srikanth – Cost Accounting MH India
6. Ratnam, Cost Accounting - Kitabmahal
7. P C Tulsian, Cost Accounting – MHE India
8. Nigam & Sharma: Cost Accounting, HPH
9. Dr. B. Mariyappa: Cost Accounting HPH
10. Khanna, Ahuja & Pandey – Practical Costing - S Chand & Co. Ltd.
11. B.S. Raman, Cost Accounting. United Publisher
12. Ravi M. Kishore – Cost Management – Taxmann.

: E-BUSINESS AND ACCOUNTING

LEARNING OBJECTIVE: The objective of the subject is to familiarize the students with E- Commerce models and Tally

Unit 1: E-BUSINESS **12 Hrs.**

Introduction, E-Commerce – Definition, History of E-commerce, differences between E-Commerce and E-Business. Comparison of Traditional Commerce and E-commerce, Advantages and Disadvantages of E-Commerce, E-Commerce Business Models – B to B, B to C, C to C, C to B and P to P (Peer to Peer) Models – Emerging trends. Web Auctions, Virtual Communities, Portals, E-Business Revenue Models.

Unit 2: HARDWARE AND SOFTWARE FOR E-BUSINESS **08 Hrs.**

Web server – Internet – World Wide Web – Hardware and Software for Web Servers, Web Hosting Choices – Shopping Cart.

Unit 3: GETTING STARTED WITH TALLY **10 Hrs.**

Meaning of Tally software – Features – Advantages – Required Hardware, Preparation for Installation of Tally Software – Installation. Items on Tally screen: Menu Options, Creating a New Company, Basic Currency Information, Other Information, Company Features and Inventory Features**.**

Unit 4: CONFIGURING TALLY **16 Hrs.**

General Configuration, Numerical Symbols, Accounts/Inventory Information – Master Configuration – Voucher Entry Configuration. Working in Tally: Groups, Ledgers, Writing Voucher, Different types of Voucher, Voucher Entry - Problem on Voucher Entry -Trial Balance, Accounts Books, Cash Book, Bank Books, Ledger Accounts, Group Summary, Sales Register and Purchase Register, Journal Register, Statement of Accounts, & Balance Sheet.

Unit 5: REPORTS IN TALLY: **10 Hrs.**

Generating Basic Reports in Tally – Financial Statements – Accounting Books and Registers – Inventory Books and Registers – Exception Reports – Printing Reports – Types of Printing Configuration of Options – Printing Format.

BOOKS FOR REFERENCE:

1. Raydu – E Commerce, HPH
2. Suman. M – E Commerce & Accounting - HPH
3. Kalakota Ravi and A. B. Whinston : Frontiers of Electronic Commerce, Addison Wesley
4. Watson R T : Electronic Commerce – the strategic perspective. The Dryden press
5. Amrutha Gowry & Soundrajana, E – Business & Accounting, SHBP.
6. C.S.V Murthy- E Commerce, HPH
7. Agarwala K.N and Deeksha Ararwala: Business on the Net – Whats and Hows of E-Commerce
8. Agarwala K. N &Deeksha Ararwala: Business on the Net –Bridge to the online store front, Macmillan, N.Delhi.
9. P. Diwan / S. Sharma – E – Commerce
10. Srivatsava: E.R.P, I.K. International Publishers
11. Diwan, Prag and Sunil Sharma, Electronic Commerce – A manager guide to E-business, Vanity Books International.
12. Tally for Enterprise Solutions

PRACTICALS ON SKILL DEVELOPMENT

Unit 1: ADVANCED CORPORATE ACCOUNTING

- Pass journal entries for redemption of preference shares and Debentures under different methods, using imaginary figures.
- Compile the latest mergers and acquisitions in Indian corporate sector.
- Prepare, with imaginary figures, a Revaluation Account in the books of Amalgamating Company.
- Pass journal entries for internal reconstruction, with imaginary data and figures.
- Prepare the format of 'Statement of Affairs' and 'Liquidator's Statement of Account' with imaginary figures.

Unit 2: GOODS AND SERVICES TAX

- Present the framework of indirect taxation in India.
- For at least 5 imaginary business transactions, identify 'supply' or 'not a supply'.
- List at least 5 goods and 5 services exempt from GST.
- Show the calculation of 'value of supply' and 'GST Liability' with imaginary figures and applicable rates.
- Show the calculation of GST payable after adjusting 'Input-Tax Credit' with imaginary figures.

Unit 3: COST ACCOUNTING

- Prepare a Cost Sheet with imaginary figures.
- List the documents required in Inventory Management.
- Demonstrate the valuation of inventory under FIFO / LIFO / Weighted Average Method, with imaginary figures.
- Calculate the amount of 'labour incentive' under Halsey / Rowan Plans, using imaginary data.
- Calculate Machine Hour Rate of 'Production Overhead', with imaginary figures.

Unit 4: E-BUSINESS AND ACCOUNTING

- List at least 2 companies / business entities under each type of E-Commerce Business Model.
- Generate Journal Entries for at least 10 imaginary business transactions in Tally.
- Generate Cash book for imaginary transactions in Tally.
- Generate a Trial Balance with imaginary figures in Tally.
- Generate Financial Statements with imaginary figures in Tally.

: INCOME TAX - I

LEARNING OBJECTIVE: The Objective of this subject is to expose the students to the various provision of Income Tax Act relating to computation of Income of individual assesses.

Unit 1: INTRODUCTION TO INCOME TAX **08 Hrs.**

Brief History of Indian Income Tax - Legal Frame Work – Types of Taxes - Cannons of Taxation – Important Definitions: Assessment, Assessment Year, Previous Year (including Exceptions), Assessee, Person, Income, Casual Income, Gross Total Income,– Scheme of taxation. Meaning and classification of Capital & Revenue. Income tax authorities: Powers & functions of CBDT, CIT & A.O.

Unit 2: EXEMPTED INCOMES **04 Hrs.**

Introduction – Exempted Incomes u/s 10 applicable to Individual Assessees.
Agricultural Income – Definition, Scheme of Partial Integration (Theory only)

Unit 3: RESIDENTIAL STATUS AND INCIDENCE OF TAX **08 Hrs.**

Determination of Residential Status of Individual assessees, Incidence of Tax. Problems.

Unit 4: INCOME FROM SALARY **24 Hrs.**

Meaning and Definition - Basis of Charge – Advance Salary – Arrears of Salary – Allowances – Perquisites – Provident Fund - Profits in Lieu of Salary: Voluntary Retirement Compensation, Retrenchment Compensation – Gratuity - Commutation of Pension - Encashment of Earned leave - Deductions from Salary u/s 16 – Problems on computation of taxable Income from Salary.

Unit 5: INCOME FROM HOUSE PROPERTY **12 Hrs.**

Basis of Charge – Deemed Owners – Exempted House Property Income – Composite Rent - Annual Value – Determination of Annual Value – Treatment of Unrealized Rent – Loss due to Vacancy – Deductions from Annual Value u/s 24 – Problems on computation of taxable Income from House Property.

BOOKS FOR REFERENCE:

1. Dr. Vinod K. Singhania: Direct Taxes – Law and Practice, Taxmann publication.
2. B.B. Lal: Direct Taxes, Konark Publisher (P) ltd.
3. Dr. Mehrotra and Dr. Goyal: Direct Taxes – Law and Practice, Sahitya Bhavan Publication.
4. Dinakar Pagare: Law and Practice of Income Tax, Sultan Chand and sons.
5. Gaur & Narang: Income Tax.
6. 7 Lectures – Income Tax – I, VBH
7. Dr.V.Rajesh Kumar and Dr.R.K.Sreekantha: Income Tax – I, Vittam Publications.

AUDITING AND CORPORATE GOVERNANCE

LEARNING OBJECTIVES: The objectives of this course is to provide working knowledge of the framework of auditing system in India, and enable the students to acquire an understanding of the tools, techniques and procedure of audit.

Unit 1: INTRODUCTION TO AUDITING **14 Hrs.**

I**ntroduction** – Meaning - Definition – Objectives – Differences between Accountancy and Auditing – Types of Audit - Advantages of Auditing – Preparation before commencement of new Audit – Audit Notebook – Audit Working Papers – Audit Program, Audit report, Recent Trends in Auditing- Digital Auditing and Forensic Audit. Nature & Significance of Tax Audit – Cost Audit - Management Audit. Company Auditor – Appointment – Qualification - Powers - Duties and Liabilities – Professional Ethics of an Auditor.

Unit 2: INTERNAL CONTROL **10 Hrs.**

Meaning and objectives. Internal Check: Meaning, objectives and fundamental principles. Internal Check as regards: Wage Payments, Cash Sales, Cash Purchases. Internal Audit: Meaning - Advantages and Disadvantages of Internal Audit – Differences between Internal Check and Internal Audit.

Unit 3: VOUCHING **10 Hrs.**

Meaning - Definition – Importance – Routine Checking and Vouching – Voucher -Types of Vouchers – Vouching of Receipts: Cash Sales, Receipts from debtors, Proceeds of the sale of Investments. Vouching of Payments: Cash Purchases, Payment to Creditors, Deferred Revenue Expenditure.

Unit 4: VERIFICATION AND VALUATION OF ASSETS AND LIABILITIES **12 Hrs.**

Meaning and Objectives of verification and valuation– Position of an Auditor as regards the Valuation of Assets – Verification and Valuation of different Items: Assets: Land & Building, Plant & Machinery, Goodwill – Investments - Stock in Trade. Liabilities: Bills Payable - Sundry Creditors – Contingent Liabilities.

Unit 5: CORPORATE GOVERNANCE **10 Hrs.**

Introduction, meaning, scope, principles and significance of corporate Governance, strengthening of corporate governance – Role and composition of board. Remuneration of directors and senior executives, Benefits and limitations of corporate governance

BOOKS FOR REFERENCE

1. P N Reddy & Appannaiah, Auditing, HPH
2. TR Sharma, Auditing, Sahitya Bhavan
3. BN Tandon, Practical Auditing, Sultan Chand
4. Dr. Nanje Gowda, Principles of Auditing, VBH
5. Dr. Alice Mani: Principles & Practices of Auditing, SBH.
6. K. Venkataramana, Principles and Practice Of Auditing, SHBP.
7. MS Ramaswamy, Principles and Practice of Auditing.
8. Dinakar Pagare, Practice of Auditing, Sultan Chand
9. Kamal Gupta, Practical Auditing, TMH
10. R.G Sexena - Principles and Practice of Auditing, HPH

AC 5.3 ADVANCED ACCOUNTING

LEARNING OBJECTIVE: The objective of this subject is to make the students familiar with the advanced aspects of accounting along with their practical application.

Unit 1: EMPLOYEE STOCK OPTION SCHEME / PLAN **06 Hrs.**

Meaning of Employee Stock Option Scheme (ESOS). Important terms relating to ESOS. Rules regarding offer of ESOS in accordance with The Companies (Share Capital and Debentures) Rules, 2014. SEBI regulations regarding ESOS. Accounting treatment for ESOS. Problems.

Unit 2: BUY BACK OF SHARES **06 Hrs.**

Introduction and meaning. Objectives and benefits of buy-back. Provisions regarding buy-back of shares under Companies Act, 2013. SEBI regulations regarding buy-back of shares. Methods of buy-back – through tender offer to existing shareholders, through open market and through book-building. Accounting entries for buy-back of shares. Problems.

U**nit 3: INVESTMENT ACCOUNTS** **14 Hrs.**

Meaning of Investments. Types or Classification of Investments. Valuation of Investments, Cost of Investments, Accounting treatment for Re-classification of Investments, Disposal of Investments and income from investments. Problems.

Unit 4: FINANCIAL STATEMENTS OF BANKING COMPANIES **15 Hrs.**

Introduction. Functions of a bank. Important provisions of Banking Regulation Act, 1949 with regard to Minimum Capital and Reserves, Statutory Reserve, Cash Reserve, Statutory Liquidity Ratio etc. Special Features of Bank Accounting. Final Accounts of Banking Companies – components and formats. Accounting treatment for Rebate on Bills Discounted, Acceptance, Endorsement and Other Obligations. Problems on preparation of bank final accounts.

Unit 5: FINANCIAL STATEMENTS OF INSURANCE COMPANIES **15 Hrs.**

Introduction. Classification of Insurance Business – Life Insurance and General Insurance. Components of Financial Statements of Life Insurance Business – Revenue Account, Profit and Loss Account, Balance Sheet and Schedules. Components of Financial Statements of General Insurance Business – Revenue Account, Profit and Loss Account, Balance Sheet and Schedules. Accounting Principles for preparation of Financial Statements of Insurance companies. Problems.

BOOKS FOR REFERENCE:

1. Arulanandam & Raman; Advanced Accountancy, HPH
2. Anil Kumar, Rajesh Kumar and Mariyappa, Advanced Financial Accounting, HPH
3. Hanif and Mukherjee, Corporate Accounting, Mc Graw Hill Publishers.
4. Dr. S.N. Maheswari, Financial Accounting, Vikas Publication
5. S P Jain and K. L. Narang, Financial Accounting, Kalyani Publication
6. Soundarajan & K. Venkataramana, Financial Accounting, SHBP.
7. Dr.Janardhanan: Advanced Financial Accounting, Kalyani Publishers
9. Radhaswamy and R.L. Gupta, Advanced Accounting, Sultan Chand
10. M.C. Shukla and Grewal, Advanced Accounting.

AC 5.4: METHODS OF COSTING

LEARNING OBJECTIVE: The learning objective is to familiarize the students on the use of cost accounting methods in different industry verticals

Unit 1: JOB COSTING AND BATCH COSTING **10 Hrs.**

Job Costing: Meaning, prerequisites, job costing procedure, Features, objectives, applications, advantages and disadvantages of Job costing, Job cost sheet- simple problems.

Batch Costing: Meaning, difference between job and batch costing; process of accumulation and calculation; determination of EBQ- problems

Unit 2: CONTRACT COSTING **10 Hrs.**

Meaning, features of contract costing, applications of contract costing, similarities and dissimilarities between job costing and contract costing, recording of contract costs, meaning of terms used in contract costing; treatment of profit on incomplete contracts-Problems.

Unit 3: PROCESS COSTING **10 Hrs.**

Meaning, features and applications of Process Costing; comparison between Job Costing and Process Costing, advantages and disadvantages of process costing; treatment of process losses and gains in cost accounts; preparation of process accounts.

Unit 4: SERVICE COSTING **16 Hrs.**

Introduction to service costing; Application of Service costing; Service costing v/s product costing; Cost units for different service sectors; Service cost statement; Determination of costs for different service sectors - Transport services, hospitals and educational institutions- problems on preparation of service cost statements for these service sectors.

Unit 5: ACTIVITY BASED COSTING **10 Hrs.**

Introduction - Weakness of conventional costing system – concept of ABC – Characteristics of ABC - Kaplan and Cooper's Approach – cost drivers and cost pools – allocation of overheads under ABC — Steps in the implementation of ABC – Benefits from adaptation of ABC system – difficulties faced by the industries in the successful implementation of ABC - Problems on ABC.

BOOKS FOR REFERENCE:

1. M.N Arora, Cost Accounting. HPH
2. Nigam and Sharma, Advanced Costing.
3. B.S. Raman, Cost Accounting, United Publishers
4. K.S Thakur- Cost Accounting, Excel Books
5. B. Mariyappa, Costing Methods HPH. .
6. N.K Prasad, Costing, Book Syndicate Pvt. Limited,
7. Jain &Narang, Cost Accounting, Kalyani Publishers
8. Ravi M. Kishore – Cost Management, Taxmann
9. Anthony R. N. – Management Accounting Principles
10. S. Mukherjee & A. P. Roychowdhury – Advanced Cost and Management Accountancy
11. Tulsian P.C. & Tulsian Bharat, S. Chand Publishing

FN 5.3: ADVANCED FINANCIAL MANAGEMENT

LEARNING OBJECTIVES: The learning objective is to provide knowledge on valuation of business enterprises, to make students understand the various models of value-based management and give insight on various forms of corporate restructuring.

Unit 1: INTRODUCTION AND FUNDAMENTAL TOOLS OF FINANCE **10 Hrs.**

Meaning of Financial Management – Goals of Financial Management - Analysis of Financial Statements – DU PONT ANALYSIS; Time Value of Money – Compounding, Discounting, Annuity and Perpetuity; Weighted Average Cost of Capital – CAPM based calculation. Beta – Un-levering and Re-levering

Unit 2: CORPORATE VALUATION **16 Hrs.**

Valuation of Firm and Valuation of Equity – Net Assets Method, Earnings Capitalization Method, Relative Valuation, Chop Shop Method. Discounted Cash Flow (DCF) Method, Adjusted Present Value (APV) Method.

Unit 3: VALUE BASED MANAGEMENT **10 Hrs.**

Introduction to Value Based Management-Marakon Approach, Alcar Approach, Mc Kinsey Approach, Stern-Stewart Approach (EVA Method) and BCG Approach. Performance Measurement and Analysis. Balanced Scorecard.

Unit 4: CORPORATE RESTRUCTURING - I **10 Hrs.**

Corporate Restructuring – Forms of Corporate Restructuring. Asset Restructuring – Securitization, Sale and Lease; Financial Restructuring – Designing and re-designing capital structure; Restructuring of companies incurring continuous losses, restructuring in the event of change in law, Buy-back of shares.

Unit 5: CORPORATE RESTRUCTURING - II **10 Hrs.**

Mergers and Acquisitions – Meaning and differences; Financing of merger (deciding between merger and acquisition), Determining Exchange Ratio – Range and Terms. Feasibility of Mergers and Acquisitions

BOOKS FOR REFERENCES:

1. V. Rajesh Kumar, "Strategic Financial Management", Mc Graw Hill Publishers.
2. Bender, Ruth and Ward, Keith, "Corporate Financial Strategy", Butterworth Heinemann.
3. Damodaran, Aswath, "Damodaran on Valuation", John Wiley.
4. Damodaran, Aswath, "The Dark Side of Valuation", John Wiley.
5. Chandra, Prasanna, "Corporate Valuation and Value Creation", Mc Graw Hill.
6. Allen, David, "An Introduction to Strategic Financial Management – The Key to Long Term Profitability", The Chartered Institute of Management Accountants, Kogan Page.
7. Allen, David, "Financial Decisions – A Guide to the Evaluation and Monitoring of Business Strategy", The Chartered Institute of Management Accountants, Kogan Page.
8. Hampton, John, "Financial Decision Making – Concepts, Problems and Cases", Prentice Hall of India.
9. Jakhotiya, G.P., "Strategic Financial Management", Vikas Publishing House Private Limited.
10. Vedpuriswar, A.V, "Strategic Financial Management – Achieving Sustainable Competitive Advantage", Vision Books.

FN 5.4: FINANCIAL SERVICES

LEARNING OBJECTIVE: The objective of this course is to orient the learner about the various areas of financial services and their operational modalities.

Unit 1: OVERVIEW OF FINANCIAL SERVICES 08 Hrs.

Concept of Financial Services, Objectives, Functions and Characteristics of Financial Services, Financial Services Market – Concept and Constituents. Types of Financial Services – Fund Based and Fee Based, Growth of Financial Services in India, Problems of Financial Services Sector.

Unit 2: FUND BASED FINANCIAL SERVICES I: LEASING, HIRE-PURCHASE AND CONSUMER CREDIT 14 Hrs.

Leasing – Introduction, Concept of Leasing and Classification, Advantages and Limitations of Leasing, Financial Evaluation of Leasing – from Lessor's perspective and Lessee's Perspective.

Hire-Purchase and Consumer Credit: Introduction, Conceptual Framework, Legal Framework, Financial Evaluation.

Unit 3: FUND BASED FINANCIAL SERVICES II: FACTORING, BILL DISCOUNTING AND VENTURE CAPITAL FINANCING 14 Hrs.

Factoring: Introduction, Mechanism of Factoring, Functions of a Factor, Types / Forms of Factoring, Factoring in India.

Bill Discounting: Introduction, Types of Bills - Demand Bill, Usance Bill and Documentary Bills. Creating of Bill of Exchange, Discounting of a Bill of Exchange. Bill Market Schemes.

Venture Capital Financing: Introduction and Features, Stages of Financing – Early State Financing and Later Stage Financing. Indian Venture Capital Scenario. SEBI Venture Capital Funds (VCFs) Regulations, 1996.

Unit 4: FEE BASED FINANCIAL SERVICES I: MERCHANT BANKING 10 Hrs.

Genesis, Definition, Functions of Merchant Bankers, Merchant Bankers' Code of Conduct, Regulatory Framework – Operational Guidelines.

Unit 5: FEE BASED FINANCIAL SERVICES II: STOCK BROKING, DEPOSITORIES, CREDIT RATING 10 Hrs.

Stock Broking: Stockbrokers, Registration, Conditions of Registration, General Obligations and Responsibilities.

Depositories: Depository System, Depositories Act, Rights / Obligations of Depositories, Participants, Issuers and Beneficial Owners.

Credit Rating: Introduction, Regulatory Framework, Credit Rating Agencies, Rating Process and Methodology.

BOOKS FOR REFERENCE:

1. Gurusamy, S, "Financial Services and System", McGraw Hill Education.
2. Khan M Y, "Financial Services", McGraw Hill Education.
3. Tripathi, Ruchi, "Management of Financial Institutions and Services", Galgotia Publishing Company.
4. Kataria, Kalpana and Rajni, "Financial Markets, Institutions and Financial Services", Galgotia Publishing Company.
5. Khan M Y, "Indian Financial System", McGraw Hill Education.

MK 5.3: CONSUMER BEHAVIOUR AND MARKETING RESEARCH

LEARNING OBJECTIVES: The objectives of this course of to develop an understanding about the consumer decision-making process and its implications for marketing decisions of firms and to familarise students with concepts, tools and techniques of business research.

Unit 1: INTRODUCTION TO CONSUMER BEHAVIOR **10 Hrs.**

Introduction to Consumer Behaviour - A managerial & consumer perspective; Need to study Consumer Behaviour; Applications of consumer behaviour knowledge; Models of Consumer Behaviour; consumer's decision-making process; introduction to online consumer behaviour.

Unit 2: **CONSUMER BUYING BEHAVIOUR** **12 Hrs.**

Individual determinants - Consumer needs & motivation; personality and self-concept; consumer perception; learning & memory; nature of consumer attitudes; consumer attitude formation and change. Environmental determinants- Cultural influences - Social class - Reference groups and family influences - Opinion leadership and the diffusion of innovations.

Unit 3: **MARKETING RESEARCH** **08 Hrs.**

The nature of marketing research and its applications, types of MR – exploratory, descriptive and conclusive; surveys and experimental designs in MR; The MR process and Research Design.

Unit 4: DATA COLLECTION **10 Hrs.**

Sampling- probability and non-probability; Determining sample size; Sources of data - Primary and secondary sources. Quantitative and qualitative data. Design of questionnaires and Schedules. Specific type of measurement instruments- attitude scales, measures of emotion, perceptual scales.

Unit 5: **DATA ANALYSIS AND REPORTING** **10 Hrs.**

Analysis: Frequency tables, Cross tabulation, measures of central tendency and variation, Correlation, and regression. Tests of hypothesis- Uni and multivariate tests Z test, T-test, Chi-Square tests and ANOVA. Layout of the Research Report.

BOOKS FOR REFERENCE:

1. Leon. G. Schiffman & Leslve Lazer Kanuk; Consumer behaviour; 6th Edition; PHI, New Delhi, 2002.
2. Suja. R.Nair, Consumer behaviour in Indian perspective, First Edition, Himalaya Publishing House, Mumbai, 2009.
3. K. Venkatramana, Consumer Behaviour, SHBP.
4. Blackwell; Consumer Behaviour, 2nd Edition.

MK 5.4: DIGITAL MARKETING

LEARNING OBJECTIVES: The objective of this course is to develop the ability in students to identify the importance of the digital marketing for marketing success, to manage customer relationships across all digital channels and to create a digital marketing plan.

Unit 1: INTRODUCTION TO DIGITAL MARKETING **06 Hrs.**

Meaning and importance of Digital Marketing, Digital Marketing platforms, Changing trends in Digital Marketing era

Unit 2: SEARCH ENGINE OPTIMIZATION (SEO) **10 Hrs.**

Meaning of SEO. Trends in SEO Different kinds of traffic On and off Page Optimisation (OPO)-Linking Strategies, Competitor Analysis

Unit 3: SEARCH ENGINE MARKETING (SEM) **10 Hrs.**

Introduction to SEM platforms – paid platforms, Introduction to Google AdWords Campaign creation process, Demographic Targeting.

Unit 4: CONVERSIONS **10 Hrs.**

Types of Conversions, Conversion Tracking, Optimizing Conversions, track offline conversions, Analyzing conversion data

Unit 5: SOCIAL MEDIA MARKETING AND MEASUREMENTS **20 Hrs.**

Social Media Marketing - Meaning, importance creation, streaming and measuring of Mobile Ads, YouTube Advertising, BING AdCenter, Facebook Marketing, LinkedIn Marketing, Content Marketing, Email Marketing, Social Media Marketing, Facebook Marketing**.** Evolution of online communities, Viralness.

Social Media Measurement-The ROI in Social Media Marketing, Tools and Dashboards, Reputation and Crisis management

BOOKS FOR REFERENCE:

1. Ryan Deiss and Russ Hennesberry, 2017, Digital Marketing for Dummies
2. Jan Zimmerman and Deborah: Social Media Marketing
3. Understanding Digital Marketing, Marketing Strategies for Engaging The Digital Generation 4th Edition by Damian Ryan, Kogan Page Ltd
4. David Meerman Scott 'The New Rules of Marketing and PR – David Meerman Scott

HR 5.3: EMPLOYEE WELFARE AND SOCIAL SECURITY

LEARNING OBJECTIVE: The objective of this course is to enable students to acquire knowledge on Labour Welfare, administration & Social Security.

Unit 1: SOCIAL & LABOUR WELFARE **10 Hrs.**

Social Welfare; Labour Welfare: Concept, Scope and objectives Philosophy and Principles of Labour Welfare; Indian constitution and Labour Welfare Labour Welfare Policy and Five-Year Plans

Unit 2: INDIAN LABOUR ORGANIZATION **10 Hrs.**

Impact of ILO on Labour Welfare in India Agencies of Labour Welfare and their Roles Labour Welfare Programmes: Statutory and Non-Statutory, Extra Mural and Intra Mural. Welfare Canters Welfare Officer: Role, Status and Functions.

Unit 3: LABOUR ADMINISTRATION **16 Hrs.**

Evolution of Machinery for Labour Administration Central Labour Administrative Machinery in India Labour Administration in India Director General of Employment and Training Director General of Factory Advice Service Provident Fund Organization ESI Schemes Central Board for Workers Education

Unit 4: COLLECTIVE BARGAINING **10 Hrs.**

Meaning and definition of collective bargaining, Importance of collective bargaining. Types and functions of collective bargaining

Unit 5: SOCIAL SECURITY **10 Hrs.**

Concept, objectives and Scope of social security. Social Assistance and Social Insurance. Development of Social Security in India. Social Security measures for Industrial Employees

BOOKS FOR REFERENCE:

1. Moorthy, M.V. Principles of Labour Welfare, Oxford & IBH Publishing Co., New Delhi.
2. Vaid, K.N. Labour Welfare in India, Sree Ram Centre for Industrial Relations and Human Resources, New Delhi.
3. K. Venkataramana, Employee Welfare& Social Security, SHBP.
4. Sharma, A.M. Aspects of Labour Welfare and Social Security, Himalaya Publishing, House, Mumbai.
5. Ram Chandra P. Singh, Labour Welfare Administration in India, Deep & Deep Pub., New Delhi.
6. Punekar, S.D. Deodhar S.B., Sankaran, Saraswathi, Labour Welfare, Trade Unionism and Industrial
7. Relations, Himalaya Publishing House, Mumbai.
8. Pant, S.C., Indian Labour Problems, Chaitanya Publishing House, Allahabad.
9. Saxena, R.C., Labour Problems and Social Welfare, K. Nath & Co., Meerut.
10. Bhogiliwala, T.N. Economics of Labour & Industrial Relations, Sahitya Bhavan Publishing Agra.
11. Memorial, C.B. Dynamics of Industrial Relations in India, Himalaya Publishing. House, Mumbai.

HR 5.4: STRATEGIC HUMAN RESOURCE MANAGEMENT

LEARNING OBJECTIVE: the objective of this course is to enable students to understand human resource environment from a strategic perspective and learn the process of planning, implementation and evaluation of Strategic contributions

Unit 1: INTRODUCTION TO STRATEGIC HUMAN RESOURCE MANAGEMENT 10 Hrs.

Strategy: Meaning, process of strategic – environmental scan, strategy formulation, implementation and control, need for strategic HRM, importance of SHRM, Theoretical frame work of SHRM, HRM as a tool of strategy, Investment perspective of Human Resources - Management values, Risk return on investments, Economic rationale for investment in training, Utility theory- Outsourcing as an alternative to investment in Human resources

Unit 2: THE HUMAN RESOURCE ENVIRONMENT 14 Hrs.

Shifts in business environment, Response of organizations to changing business environment- Portfolio related, structure and process related changes, General human resource environment - Technology and organisational structure, Worker values and attitudinal trends, Management trends, Demographic trends, Trends in utilisation of human resources, International developments. Human resources legal environment - Emerging trends and paradigm shifts towards Employee Relations, Employment Related Legislations, Payment Related Legislations, Social Security Related Legislations, Welfare Related Legislations

Unit 3: STRATEGIC FORMULATION 06 Hrs.

Development of organizational philosophy and mission statement, Environmental scanning, Analysis of SWOT--Formulation of strategic objectives, Generation of alterative strategy, Evaluation and selection of strategies

Unit 4: HUMAN RESOURCES PLANNING AND IMPLEMENTATION 16 Hrs.

Strategic role of HRP, Overview of HRP, Managerial issues in planning, integrating HRP with Strategic planning--Selecting forecasting technique, Forecasting the supply of human resources, Forecasting the demand for human resources--Strategy implementation – workforce utilization and employment practices - Efficient utilization of human resources, Dealing with employee shortages, Selection of employees, Dealing with employee surpluses Special implementation challenges--Career path for technical professionals, Dual career couples, Strategy implementation system – Reward and development systems: - Strategically oriented performance management system--Strategically oriented compensation systems. Employee development

Unit 5: THE PERFORMANCE IMPACT OF HUMAN RESOURCES PRACTICE 10 Hrs.

Human Resource performance impact: Individual high-performance practices, Limitations of individual practices, Evolution of practices, Systems of high-performance human resource practices, Individual best practices Vs systems of practices, Universal practices Vs contingency perspectives.

Human Resource Evaluation: Overview and approaches to evaluation, Prevalence of evaluation, Evaluating strategic contributions of traditional areas, Evaluating strategic contributions in emerging areas.

BOOKS FOR REFERENCE:

1. Strategic HRM by Charles R Greer (Recommended)
2. Strategic Human Resource Management, Jeffrey. A. Mello, Thomson publication
3. Strategic Human Resource Management- theory and practice –A reader, edited by Graeme Salaman, John Storey and Jon Billsberry Sage publication.
4. Strategic Human Resource Management, Tanuja Agarwala, Oxford publication

BK 5.3: REGULATORY FRAMEWORK OF BANKING

LEARNING OBJECTIVES: The objective of this course is to acquire knowledge in the legal & regulatory framework of the banking system, various laws and enactments affecting day to day Banking Operations

Unit 1: LEGAL FRAMEWORK **10 Hrs.**

Business of Banking; Constitution of Banks; RBI Act, 1934; Banking Regulation Act, 1949; Banking Regulation Amendment Bill 2017; Role of RBI; Govt. as a Regulator of Banks; Control over Co-operative Banks; Regulation by other Authorities.

Unit 2: CONTROL OVER ORGANIZATION OF BANKS **10 Hrs.**

Licensing of Banking Companies; Branch Licensing; Paid up Capital and Reserves; Shareholding in Banking Companies; Subsidiaries of Banking Companies; Board of Directors; Chairman of Banking Company; Appointment of Additional Directors; Restrictions on Employment; Control over Management; Corporate Governance; Directors and Corporate Governance.

Unit 3: REGULATION OF BANKING BUSINESS **12 Hrs.**

Power of RBI to Issue Directions; Acceptance of Deposits; Nomination; Loans and Advances; Regulation of Interest Rate; Regulation of Payment Systems; Internet Banking Guidelines; Regulation of Money Market Instruments; Banking Ombudsman; Reserve Funds; Maintenance of CRR, SLR; Assets in India.

Unit 4: LEGAL ASPECTS OF BANKING OPERATIONS **12 Hrs.**

Returns Inspection, Winding up, Mergers & Acquisitions

Annual Accounts & Balance Sheet; Audit & Auditors; Submission of Returns; Preservation of Records and Return of Paid Instruments; Inspection and Scrutiny; Board for Financial Supervision; Acquisition of Undertakings; Amalgamation of Banks; Winding up of Banks; Penalties for offences.

Unit 5: LEGAL FRAMWWORK OF E- BANKNG **12 Hrs.**

Legal issues in E - Banking - Security and privacy risks, Legal issues, Operational issues and risks,
Legal framework of E – Banking:

a. Provision s of information technology Act 2000
b. Provisions under Negotiable Instruments Act, 1881
c. Provisions under Income tax, Act, 1961
d. Indian Penal Code, 1860:
e. Miscellaneous Provisions: Section 11 of the proposed Prevention of Money Laundering Bill, 1999
f. Guidelines Issued by Reserve Bank of India

BOOKS FOR REFERENCE:

1. Gordon & Natarajan: Banking Theory Law and Practice, Himalya Publishing House
2. Varshaney P.N.:- Banking Law & Practice
3. Srivastava S. P.; Banking Theory & Practice, Anmol Publications
4. Legal and Regulatory Aspects of Banking– Published by Indian Institute of Banking & Finance
5. Kothari N. M: Law and Practice of Banking

BK 5.4: MARKETING OF BANKING PRODUCTS

LEARNING OBJECTIVE: The objective of this course is to prepare the students to acquire required knowledge and skills for marketing of banking products and services. The subject also looks into various aspects of service quality aspects of bank branches.

Unit 1: INTRODUCTION: **10 Hrs.**

Identification of needs-wants-Demands- Diagnosing various banking environments-Regulatory-cultural-Political-Economic-Public-Societycustomers- Employees- Retail banking in India- Drivers of retail banking Wholesale Banking- Retail banking products overview-customer requirements and -opportunities and challenges in retail banking

Unit 2: DEVELOPING BANKING PRODUCTS AND SERVICES: **12 Hrs.**

Meaning, Importance and Functions - Marketing of Services - Product Research & Development - Test Marketing of Bank Products - Product Life Cycle - Product Modification - New Product Development Branding of Bank Products - Pricing of Bank Products and Services - Objectives, Strategies and Methods - Factors Influencing the Pricing Decisions-Importance of Pricing- Deposit pricing-Loan pricing-Pricing of services

Unit 3: DISTRIBUTION AND PROMOTION: **12 Hrs.**

Distribution - Factors Influencing - Direct and Indirect Channels of Bank Products - Physical Distribution -Channel Functions and Services - Role of Electronic Marketing Channels-ATMS-Debit Cards-Credit Cards-POS-Internet Banking-Mobile Banking-Vending Machines-Promotion - Promotion Mix and Role of Promotion in Marketing - Marketing Information Systems

Unit 4: DELIVERY CHANNELS: **12 Hrs**.

Operations-process and practical's- Traditional Delivery channels- Cheque/ Withdrawal slip-Demand draft-Bankers cheque- -Modern delivery channels- ATMs, POS, Internet Banking, M-Banking-Selling Process in retail products-Direct Selling Agents- Credit -Debit Cards - Credit Vs. Debit Cards, Eligibility, Purpose, Amounts, Margin,-Remittances -Funds Transfer

Unit 5: CUSTOMER RELATIONSHIP MANAGEMENT: **10 Hrs.**

Bank Customer relationship-CRM –Role of Marketing Officer - Branch Servicing - Customer meet-Target achieving- Bank Marketing in Urban-Rural Areas-Trends in Bank Marketing - Role of MIS in bank Marketing.

BOOKS FOR REFERENCE:

1. Banking Products and Services, Indian Institute of Banking and Finance
2. IIBF "Retail Banking "-3 rd Edition, Macmillan Education
3. Agarwal, OP, Banking PRODUCTS AND SERVICES, Himalaya Publishing House, Mumbai
4. George E Rejda, Banking Innovations, Pearson Education, New Delhi

IS 5.3: ICT APPLICATION IN BUSINESS

LEARNING OBJECTIVE: The objective of the subject is to make the students understand the concept of information systems used in business and to know the latest trends in doing business in internet environment.

Unit 1. INFORMATION TECHNOLOGY AND BUSINESS – AN OVERVIEW 14 Hrs.

Concepts of data, information and computer based information system. impact of information technology on business (business data processing, intra-organizational and inter-organizational communication by using network technology, business process and knowledge process outsourcing). Types of Information System - Transaction Processing System (TPS), Management Information System (MIS), Decision Support System (DSS), Knowledge Management System (KMS) - and their implementation at managerial levels (operational, tactical and strategic).

Unit 2: MS OFFICE 14 Hrs.

MS Word – editing a document- Formatting – Spell Checking – Page setup, Using tabs, Tables and other features Mail Merge, MS Excel – building work sheet- data entry in work sheets, auto fill – working with simple problems- formula – statistical analysis, sort, charts, MS Power point – Design, Side Show – Presentation.

Unit 3: DATA COMMUNICATION AND COMPUTER NETWORK 10 Hrs.

(a) Data Communication: Concept of Data communications, Transmission Modes [Simplex, Half-Duplex, Full Duplex, Serial, Parallel, Synchronous, Asynchronous], Communication Media. Wireless and satellite communication, Wireless Broadband, WAP, Network components – Bridge, Switch, Router, Gateway
(b) Computer Networks: Network Concept, Types: LAN, WAN, MAN, VAN, SAN.
Various Topologies: Bus, Star, Ring, Mesh, Tree.

Unit 4: INTRODUCTION TO INTERNET 10 Hrs.

Meaning of Internet. Concepts of Internet, WWW, Webpage, Website, Intranet and Extranet, IP Address (IPv4, IPv6), URL, Domain name System. Internet Protocols - TCP/IP, UDP, FTP, TELNET, HTML, DHTML AND XML. (concepts only), EMAIL, working with EMAIL, Search Engines

Unit 5: RECENT TRENDS IN INFORMATION TECHNOLOGY 08 Hrs.

Artificial Intelligence, Block Chain, Edge Computing, Internet of Things (IoT), Quantum Computing, Cloud Computing, Virtual/Augmented Reality, Mobile Apps and Computing, Big Data Analytics.

BOOKS FOR REFERENCE:

1. Turban, Rainer and Potter, Introduction to Information Technology, Wiley
2. ITLESL, Introduction to Information Technology, Pearson
3. Sinha & Sinha, Fundamentals of Computers, BPB Publication
4. Ramesh Behl, Information Technology for Management, TMH

IS 5.4: ACCOUNTING SOFTWARE

LEARNING OBJECTIVE: To develop an understanding of the functioning of accounting software and apply the same in accounting, preparation of basic reports and financial statements.

Unit 1: INTRODUCTION TO COMPUTERIZED ACCOUNTING: 8 Hrs.

Introduction-Meaning and Definition of Computerized Accounting – Objectives of Computerized Accounting, Features of Computerized Accounting, differences between Computerized Accounting and Manual Accounting, Merits and Demerits of Computerized Accounting System.

Unit 2: ACCOUNTING SOFTWARE: 12 Hrs.

Introduction to Accounting Software a global perspective, Need for Accounting software, Meaning of Accounting software, Features of Accounting software, merits and demerits of use of Accounting software- globally used popular Accounting software.

Unit 3: APPLICATION OF ACCOUNTING SOFTWARE: 12 Hrs.

Application of accounting software to management, different types of accounting software, functions of accounting software from operation perspective, functions of ERP, comparative analysis of standalone accounting software and ERP, criteria to choose an accounting software, potential issues or risks of accounting software.

Unit 4: INDUSTRY SPECIFIC ACCOUNTING SOFTWARE: 12 Hrs.

Industry specific Accounting Software- Construction Industry, Manufacturing Industry, Health care Industry, Aviation Industry, Financial Services Industry, Education Industry etc. Basics of working with accounting software such as- Creation of Masters, Accounting Reports, Reconciliation and Preparation of Financial Statements.

Unit 5: WORKING ON ACCOUNTING SOFTWARE: 12 Hrs.

A case study-based project on working with an accounting software involving installation, creation of masters, accounting reports, reconciliation and preparation of final accounts using ZOHO Indian Accounting Software and Quick Books US based Accounting Software.

BOOKS FOR REFERENCE:

1. Digital Accounting - Ashutosh Deshmukh
2. Book-keeping and Accounting Explained – Calvin K. Lee
3. Myob Software Dummies - Veechi Curts
4. Xero Dummies - Heather Smith.
5. Quick Books 2012 Dummies- Stephen. L
6. SAP ERP User Guide Sydnie Mc Connell
7. SAP Controlling in SAP FICO-Kathrin Schmalzing.

IF 5.3: INTERNATIONAL FINANCIAL MANAGEMENT

LEARNING OBJECTIVE: The objective is to enable students to understand the basic concepts of Financial Management and the role of Financial Management in decision-making.

Unit 1: INTRODUCTION TO INTERNATIONAL FINANCIAL MANAGEMENT 08 hrs.
Introduction, Meaning & Definition, Objectives, Functions, Evolution, Principles, Goals, Significance of International Financial Management; World Monetary System; Challenges in Global Financial Market; Multinational Finance System; International and Multinational Banking.

Unit 2: INTERNATIONAL FINANCE & BANKING 14 hrs.
Exchange Rate Regime: A historical Perspective; International Monetary Fund: Modus Operandi; Fundamental of Monitory and Economic Unit; The Global Financial Market; Domestic and Offshore Market. Structure of Foreign Market; Forward Quotation and Contracts; Exchange Rate Regime and the status of Foreign Exchange Market; International Trade in Foreign Market International Trade in Banking Service; Monetization of Banking Operations.

Unit 3: INTERNATIONAL FINANCE & GLOBAL MARKETS 12 hrs.
Importance of International Finance, Driving Forces of Financial Globalisation, Changes in Capital Markets, SWOC - Financing Globally, Financial Stability, Recent Trends in International Finance.

Unit 4: FOREIGN EXCHANGE RISK MANAGEMENT 10 hrs.
Classification of Foreign Exchange and Exposure Unit; Management of Exchange Rate Risk Exposure, Currency and Interest Rates Futures; Currency Options; Financial Swap; Theories of Exchange rates, Movement: Arbitrage and Law of One price' Inflation Risk and Currency Forecasting.

Unit 5: INTERNATIONAL CAPITAL BUDGETING DECISION 12 hrs.
Introduction, Objectives, Nature. Importance of Capital Budgeting Decisions, Techniques used in Capital Budgeting Decision (simple problems), Recent trends in Capital Budgeting Decisions.

BOOKS FOR REFERENCE

1. Apte, P.G., International Financial Management, Tata Mcgraw Hill
2. Shapiro, A.C., Multinational Financial Management, Prentice Hall Of India.
3. Buckley, A, International Capita Budgeting, Tata Mcgraw Hill.
4. Bhattacharya, B., Going International: Response Strategies of The Indian Sector, Wheeler Publishing, New Delhi.
5. Joseph Anbarasu, Global Financial Management, Ane, Delhi, 2010
6. Kevin S, Fundamentals Of International Financial Management, Phi, Delhi, 2010
7. Jeff Madura, International Financial Management, Cengage Learning, Delhi, 2008
8. Alan C Shapiro, Multinational Financial Management (2002), Prentice Hall Of India, New Delhi.
9. Apte. P.G. International Financial Management, Tata McGraw Hill, New Delhi.
10. C Jeevanandham, Exchange Rate Arithmetic, Sultan Chand.

IF 5.4: FINANCIAL PERFORMANCE MANAGEMENT

OBJECTIVE: The objective is to develop knowledge and skills in the application of management accounting techniques to quantitative and qualitative information for planning decision making. Performance evaluation, and control

Unit 1: SPEIALIST COST AND MANAGEMENT ACCOUNTING TECHNIQUES 12 Hrs.

Activity based costing, Target costing, Life Cycle costing, Throughput accounting, Environmental accounting

Unit 2: DECISION MAKING TECHNIQUES 12 Hrs.

Relevant cost analysis, Cost volume Profit analysis, Limiting factors pricing decisions, make –or-buy and other short term decisions, Dealing with risk and uncertainty in decision making

Unit 3: BUDGETING AND CONTROL 10 Hrs.

Budgetary system and types of budget – Quantitative analysis in budgeting Standard Costing – Material mix and yield variances-sales mix and quantity variances – Planning and operational variances.

Unit 4: PERFORMANCE MEASURMENT AND CONTROL 12 Hrs.

Performance management information systems, sources of management Information, Management reports, Performance analysis in private sector organizations and the public sector, External considerations and behavioral aspects.

SKILL DEVELOPMENT

- Illustrate application of modern techniques of costing in industrial setting.
- Appreciate the problems surrounding scarce resource, Pricing and make-or-Buy decisions and how this relates to the assessment of performance
- Illustrate how a business should be managed and controlled and how information systems can be used to facilitate this
- Appreciate the importance of both financial and non-financial performance measures in management and the difficulties in assessing performance in divisionalized business.

BOOKS FOR REFERENCE

1. Performance Management System – R K Sahu
2. Performance Management: Toward Organizational Excellence by T V Rao
3. Performance Management: It's about Performing –Not just appraising by prem Chandha
4. Audit & Assurance INT (ACCA) ISDC Becker Publishing
5. Audit & Assurance INT (ACCA) BPP Publishing
6. Audit & Assurance INT (ACCA) Kaplan Publishing

5.7 PRACTICALS ON SKILL DEVELOPMENT

Unit 1: INCOME TAX - I

- Present the framework of Taxation in India.
- List the various Income Tax Authorities and mention their powers and functions.
- List at least 10 incomes exempt from tax
- Ascertain the Residential Status of an individual with imaginary data of arrivals and departures.
- Compute Taxable Salary of at least two individuals with imaginary figures.
- Compute Taxable Income from House Property of two houses (one let-out and one self-occupied), with imaginary figures.

Unit 2: AUDITING AND CORPORATE GOVERNANCE

- Design and develop an audit plan program for a joint stock company
- List the various documents necessary to be verified in the audit process
- Draft an audit report (qualified or clean) with imaginary data.
- Visit an audit firm, write about the procedure followed by them in auditing the books of accounts of a firm.
- Record the verification procedure with respect to any one fixed asset.
- Draft an audit program.

NOTE:

UNIT 3: ELECTIVE PAPER 5.3 (FROM FIRST ELECTIVE GROUP)

UNIT 4: ELECTIVE PAPER 5.4 (FROM FIRST ELECTIVE GROUP)

UNIT 5: ELECTIVE PAPER 5.3 (FROM SECOND ELECTIVE GROUP)

UNIT 6: ELECTIVE PAPER 5.4 (FROM SECOND ELECTIVE GROUP)

NOTE:

1. Units 1 and 2 will be covered in the University Examination, and Units 3 to 6 will be covered in Internal Assessment.

2. In case of all elective papers, the Faculty teaching 'Practicals on Skill Development' shall design and administer any five practical application oriented exercises from each subject and evaluate the same as part of Internal Assessment.

: INCOME TAX – II

LEARNING OBJECTIVE: The Objective of this subject is to make the students understand the computation of Taxable Income and Tax Liability of individuals assessees.

Unit 1: PROFITS AND GAINS FROM BUSINESS OR PROFESSION 16 Hrs.

Meaning and Definition of Business, Profession – Vocation - Expenses Expressly Allowed – Allowable Losses – Expenses Expressly Disallowed – Expenses Allowed on Payment Basis - Problems on Computing taxable Business Incomes of Proprietary Concerns and Problems on Computing Income from Profession - Chartered Accountants, Advocates and Medical Practitioners.

Unit 2: CAPITAL GAINS 14 Hrs.

Basis of Charge – Capital Assets – Transfer of Capital Assets – Computation of Taxable Capital Gains – Exemptions U/S 54, 54B, 54D, 54EC, 54F.

Unit 3: INCOME FROM OTHER SOURCES 08 Hrs.

Taxable Income under the head Other Sources – Dividend Income – tax treatment for dividends, Interest on Securities, Rules for Grossing up, Bond Washing Transactions, – Problems on Computing Taxable Income from Other Sources.

Unit 4: SET-OFF AND CARRY FORWARD OF LOSSES AND DEDUCTIONS FROM GROSS TOTAL INCOME 08 Hrs.

Meaning –Provision for Set-off & Carry forward of losses (Theory only).
Deductions u/s: 80C, 80CCC, 80CCD, 80D, 80E, 80G, 80GG, 80GGC, 80TTA, 80TTB, 80U.

Unit 5: ASSESSMENT OF INDIVIDUALS 10Hrs.

Computation of Total Income and Tax Liability of an Individual Assessee (In case of income from salary & house property, only computed income shall be given).

BOOKS FOR REFERENCE:

1. Dr. Vinod K. Singhania: Direct Taxes – Law and Practice, Taxmann publication.
2. B.B. Lal: Direct Taxes, Konark Publisher (P) ltd.
3. Dinakar Pagare: Law and Practice of Income Tax, Sultan Chand and sons.
4. Gaur & Narang: Income Tax, Kalyani
5. B.B. Lal: Income Tax, Central Sales Tax Law & Practice, Konark Publisher (P) Ltd.
6. Singhania: Income Tax
7. Dr. H.C Mehrothra : Income Tax, Sahitya Bhavan
8. 7 Lecturer Income Tax – VBH

: INDIAN ACCOUNTING STANDARDS AND IFRS

LEARNING OBJECTIVE: The objective of this subject is orient the students about the background and provisions of **accounting standards** which govern and guide the accounting process and preparation of financial statements.

Unit 1: ACCOUNTING STANDARDS **06 Hrs.**

Meaning of Accounting Standards - Need for Accounting Standards - Significance or advantages of Accounting Standards – Limitations of Accounting Standards. Orientation to International Accounting Standards, International Financial Reporting Standards and Convergence to IFRS. Accounting Standards in Indian Context – Introduction to Indian Accounting Standards (Ind AS). Accounting Bodies. Procedure for issuing Accounting Standards by the Accounting Standards Board.

Unit 2: PREPARTION OF FINANCIAL STATEMENTS AS PER IND AS **12 Hrs.**

Framework for preparation of financial statements. Presentation of Financial Statements as per Ind AS 1: Statement of Profit and Loss, Balance Sheet, Statement of Changes in Equity, Statement of Cash Flows and Notes to Accounts. Problems on preparation of Statement of Profit & Loss and Balance Sheet.

U**nit 3: PROVISIONS UNDER ACCOUNTING STANDARDS FOR ITEMS APPEARING IN FINANCIAL STATEMENTS** **14 Hrs.**

Revenue Recognition (Ind AS 18); Valuation of Inventory (Ind AS 2); Property, Plant and Equipment, including Depreciation (Ind AS 16); Borrowing Cost (Ind AS 23), Intangible Assets (Ind AS 38), Provisions (Ind AS 37), Earnings per Share (Ind AS 33)

Unit 4: PROVISIONS UNDER ACCOUNTING STANDARDS FOR ITEMS THAT DO NOT APPEAR IN FINANCIAL STATEMENTS **10 Hrs.**

Segment Reporting (Ind AS 108), Related Party Disclosures (Ind AS 24), Events occurring after Balance Sheet Date (Ind AS 10), Interim Financial Reporting (Ind AS 34)

Unit 5: CONSOLIDATED FINANCIAL STATEMENTS **14 Hrs.**

Meaning of Group, Holding and Subsidiary Company, Purpose and benefits of preparing Consolidated Financial Statements, Requirements of Companies Act, 2013 in respect of Consolidation of Financial Statements, Components of Consolidated Financial Statements, Calculation of Minority Interest, Calculation of Goodwill or Capital Reserve on Consolidation. Accounting treatment for inter-company debts, unrealised profit on stock, unrealised profit on fixed assets, and inter-company dividends.

BOOKS FOR REFERENCE:

1. Study material of the Institute of Chartered Accountants of India
2. Anil Kumar, Rajesh Kumar and Mariyappa, Indian Accounting Standards, HPH
3. Hanif & Mukherjee, Corporate Accounting, Mc Graw Hill Publishers.
4. Miriyala, Ravikanth, Indian Accounting Standards Made Easy, Commercial Law Publishers

AC 6.3: MANAGEMENT ACCOUNTING

LEARNING OBJECTIVE: The objective of this subject is to enable the students to understand the analysis and interpretation of financial statements with a view to prepare management reports for decision-making.

Unit 1: INTRODUCTION TO MANAGEMENT ACCOUNTING **12 Hrs.**

Meaning and Definition – Objectives – Nature and Scope– Role of Management Accountant, Relationship between Financial Accounting and Management Accounting, Relationship between Cost Accounting and Management Accounting, advantages and limitations of Management Accounting. Management Reporting– Principles of Good Reporting System. Analysis of Financial Statements: Types of Analysis – Methods of Financial Analysis – Problems on Comparative Statement analysis – Common Size Statement analysis and Trend Analysis as per Companies Act, 2013 Schedule III formats.

Unit 2: RATIO ANALYSIS **12 Hrs.**

Meaning and Definition of ratio, Meaning of Accounting ratio, and Ratio Analysis – Uses and Limitations – Classification of Ratios- Liquidity ratios, Profitability ratios and Solvency ratios. Problems.

Unit 3: CASH FLOW ANALYSIS **10 Hrs.**

Meaning and Definition of Cash Flow Statement – Concept of Cash and Cash Equivalents - Uses of Cash Flow Statement – Limitations of Cash Flow Statement– Differences between Cash Flow Statement and Fund Flow Statement – Provisions of Ind. AS-7. Procedure for preparation of Cash Flow Statement – Cash Flow from Operating Activities – Cash Flow from Investing Activities and Cash Flow from Financing Activities – Preparation of Cash Flow Statement according to Ind. AS-7.

Unit 4: MARGINAL COSTING **10 Hrs.**

Meaning and Definition of marginal cost, marginal costing, features of marginal costing- terms used in marginal costing – P/V ratio, BEP, Margin of Safety, Angle of Incidence. Break Even Analysis- assumptions and uses- problems. Break Even Chart.

Unit 5: BUDGETARY CONTROL AND STANDARD COSTING **12 Hrs.**

Introduction – Meaning & Definition of Budget and Budgetary Control – Objectives of Budgetary Control – essential requirements of budgetary control – advantages and disadvantages of budgetary control – Types of budgets- Functional Budgets - Cash budget, sales budget, purchase budget and production budget. Fixed and Flexible budgets - Problems on Flexible budget and Cash budget only.

Introduction to Standard Costing and Variance analysis, Uses, Material variances, Labour variances and Overhead variances- problems on material and labour variances.

BOOKS FOR REFERENCE

1. Dr. S.N. Maheshwari, Management Accounting, Vikas Publishers.
2. Sexana, Management Accounting,
3. Dr. S.N. Goyal and Manmohan, Management Accounting,
4. B.S. Raman, Management Accounting, United publishers
5. Sharma and Gupta, Management Accounting, Kalyani Publishers
6. M Muniraju & K Ramachandra, Management Accounting, HPH
7. PN Reddy & Appanaiah, Essentials of Management Accounting, HPH
8. Dr. B Mariyappa , Management Accounting, HPH
9. Sudhindra Bhat- Management Accounting

AC 6.4: ACCOUNTING FOR GOVERNMENT AND LOCAL BODIES

LEARNING OBJECTIVES: The objective of this subject is to inculcate writing and auditing of government accounting and books.

Unit 1: INTRODUCTION **10 Hrs.**

Constitutional Background –Origin and development-historical perspective- Evaluation of Government Accounts-Need for accounting system in government- accounting principles- accounts as tools for fiscal transparency highlighting the linkage, Principles of classification - Consolidated fund, Contingent fund and Public Account, Concept of Suspense Accounts-Government Accounting Rules 1990-Financial Rules of Government of India 2005-Central Government Receipts and Payment Rules 1983

Unit 2: BUDGET AND FINANCE **14 Hrs.**

Appropriation Act- Appropriation Bill-Approval of Budget- vote on account-power of sanction of spent-Revised estimate-Savings of grant-supplementary, Excess grant and Re-appropriation-para 258 to 295 – Ways and Means and budget control-para 375 to 382 - Audit Report-Public accounts of the state para 346 to 366-legislature Committees-para 335 to 346, Establishment-article 105 to 139-stores-works-advance-charitable Endowments- deposits- powers of sanction - maintenance of cash and other accounts in Government offices-Article 327 to 348- Responsibilities for losses of public money or property-article 349 to 395- Contingent Expenditure

Unit 3: ACCOUNTING FOR RURAL LOCAL GOVERNMENTS **10 Hrs.**

Panchaya Raj Institutions-origin of Panchayat Raj Institutions - Constitutional background- three tier Panchayat Raj System, Financial functions of Zilla Panchayat, Taluk Panchayat, Gram Panchayat. Salary, travelling allowances and other allowances to Adyaksha, Upadyaksha and members of Zilla Panchayat, Taluk Panchayat, Gram Panchayat. Application of Gram Panchayat Fund - Honorarium of Adyaksha and Upadyaksha of Gram Panchayat. Grants – fees, taxes, assets and liabilities of Panchayat Raj Institutions. Zilla Panchayat Budget and Account, Taluk Panchayat – Finance and account, Gram Panchayat - Budget and account Rules, Priasoft accounting software in Panchayat Raj institutions and Panchatantra software.

Unit :4 ACCOUNTING FOR URBAN LOCAL GOVERNMENTS **12 Hrs.**

Origin of Municipalities- Different tiers of urban local bodies- Urbanization in Karnataka - DMA Organization Chart - Structure of ULB, functions of municipal councils, municipal corporations, city municipal councils, town municipal councils, town panchayats, notified area committees, standing Committees, Rent, rates & taxes, fees, salary grants and other allowance to members of different schemes of ULB's, Expenditure rules-taxation rules1965-Contract rules 1986-Borrowing rules 1966-Assets and liabilities of ULB's. Regulation of duty on transfers of Immovable property, Preparation of plans, Estimates, Budgets, Receipts vouchers & Payment vouchers, Maintenance accounts of different Schemes of Urban local bodies. FBAS Accounting system in municipalities.

Unit 5: AUDIT OF GOVERNMENT AND LOCAL BODIES **10 Hrs.**

Audit-origin and development of Government Auditing –Constitutional Provisions- CAG of India and AGs (DPC) Act, 1971-Functions and spirit of Audit-Primary and Secondary Objectives of Audit-types, Methods of Audit-Scope of audit –Benefits of audit- Role of auditor- Concept of professional ethics. Auditing of Panchayat Raj Institutions. Audit report, Procedures to rectify audit objection and recovery paras, ad-hoc committees in Panchayat Raj Institutions, Duties and responsibilities of ad-hoc committee, Auditing of ULB's, Government Auditor-Inspection of Books and Vouchers, different types of audit, measures to clear audit objection and recovery paras, ad-hoc committee.

REFERENCES:

1. K R Paul, Financial Accounting, Central Book Agency, Kolkata
2. Indian audit and accounts department, accounts and audit rules
3. Karnataka Panchayat raj act 1993
4. Karnataka panchayat raj (budget and accounts rules) 2006
5. Karnataka Municipal Corporation rules-1977
6. Karnataka state audit and accounts department, Audit manual
7. Karnataka municipalities budget and accounts rules
8. Government of Karnataka local bodies Accounts and Audit circulars
9. Priasoft, panchatantra, FBAS accounting software

FN 6.3 INTERNATIONAL FINANCE

LEARNING OBJECTIVES: To orient the students on global business environment and international markets, to make students understand the various risks an enterprise is exposed to on account of international transactions and to provide knowledge and skills for hedging foreign currency risks.

Unit 1: GLOBAL FINANCIAL ENVIRONMENT **05 Hrs.**

Evolution of International Monetary System, Bimetallism, Classical Gold Standard, Interwar Period, Bretton Woods System, Flexible Exchange Rate Regime, the current Exchange Rate Agreements, European Monetary System, Fixed vs. Flexible Exchange Rate Regime.

Unit 2: INTERNATIONAL FINANCIAL DECISIONS **15 Hrs.**

International Capital Budgeting – Influence of Inflation on Capital Budgeting Decisions; Evaluation of Foreign Projects: Home Currency Approach and Foreign Currency Approach, International Financing Decisions – Source of Finance – ADRs, GDRS, ECBs, FCCBs, Masala Bonds; International Working Capital Management – Netting, Leads and Lags.

Unit 3: EXCHANGE RATE DETERMINATION **06 Hrs.**

Purchasing Power Parity Theory, Interest Rate Parity Theory, International Fischer's Effect, Pure Expectations Theory.

Unit 4: FOREIGN EXCHANGE RISK AND RISK HEDGING STRATEGIES **16 Hrs.**

Transaction Risk, Translation Risk, Economic Risk. Risk Hedging Strategies: Internal – Netting, Leads and Lags. External – Forwards, Futures, Options, Money-market Hedging, Currency Swaps.

Unit 5: INTEREST RATE RISK AND RISK HEDGING STRATEGIES **14 Hrs.**

Interest Rate Swaps, Forward Rate Agreements, Interest Rate Futures, Interest Rate Options, Caps, Floors and Collars, Swaption.

BOOK FOR REFERENCE:

1. V. Rajesh Kumar, "Strategic Financial Management", Mc Graw Hill Publishers.
2. Madura, Jeff, "International Corporate Finance", Thomson South-Western.
3. Sharan, Vyuptakesh, "International Financial Management", Prentice Hall of India.
4. Jain, Peyrard, and Yadav' "International Financial Management", MacMillan
5. J. Fred Weston, Bart: Guide to International Financial Management.
6. Robery O. Edmister: Financial Institutions - markets and Management.
7. A.V. Rajwade: Foreign Exchange International Finance and Risk Management, Prentice Hall.

FN 6.4 SECURITY ANALYSIS & PORTFOLIO MANAGEMENT

LEARNING OBJECTIVES: To provide knowledge and skill in identifying various investment alternatives and choosing the suitable alternatives and to orient the students on the procedures and formalities involved in investing.

Unit 1: BASICS OF INVESTMENTS **05 Hrs.**

Investments – Meaning. Differences between Investment, Trading and Speculation. Process of making and Managing Investments. Investment Goals and Constraints.

Unit 2: INVESTMENT ALTERNATIVES **05 Hrs.**

Non-marketable Financial Assets, Money Market Instruments, Fixed Income Securities, Equity Shares, Mutual Funds, Derivatives, Life Insurance Policies, Real Estate, Precious and Valuable items.

Unit 3: STOCK SELECTION AND PORTFOLIO CONSTRUCTION **20 Hrs.**

Stock Selection: Fundamental Analysis – Economy Analysis, Industry Analysis, Company Analysis and Stock Valuation. Technical Analysis. Efficient Market Hypothesis. Portfolio Construction Theories – Markowitz Theory, Sharpe's Single Index Model, Capital Asset Pricing Model, Arbitrage Pricing Theory.

Unit 4: BONDS **14 Hrs.**

Pricing of Bonds, Returns on Bonds, Risks associated with Bonds, Duration and Modified Duration. Bond Portfolio Construction – Immunization Strategy.

Unit 5: MUTUAL FUNDS **12 Hrs.**

Mutual Funds – Net Asset Value. Mutual Fund Returns – Dividend payment plan, Dividend Reinvestment Plan, Bonus Plan and Growth Plan. Mutual Fund Evaluation – Sharpe's Measure, Treynor's Measure, Jensen's Measure

BOOKS FOR REFERENCE:

1. V. Rajesh Kumar, "Strategic Financial Management", Mc Graw Hill Publishers.
2. Chandra, Prasanna (2008), "Investment Analysis and Portfolio Management", Tata McGraw Hill Publishing Limited, 3rd Edition.
3. Avadhani V.A (2006), "Securities Analysis and Portfolio Management", Himalaya Publishing House, Eighth Revised Edition.
4. Ranganatham and Madhumathi (2005); "Investment Analysis and Portfolio Management", Pearson Education, First Edition.
5. Pandian, Punithavathy (2007); "Security Analysis and Portfolio Management", Vikas Publishing House Private Limited, Fifth Reprint Edition.
6. Kevin (2008); "Security Analysis AND Portfolio Management", Prentice Hall of India Private Limited, First Reprint Edition.
7. Maheshwari, Yogesh (2008); "Investment Management", PHI Learning Private Limited, First Edition.
8. Fischer, E Donald and Jordan, J Ronald (2005); "Security Analysis and Portfolio Management", Prentice Hall of India Private Ltd., 6th Edition.
9. Reily and Brown (2007); "Investment Analysis and Portfolio Management", Thomson South Western, 8th Edition, First Indian Reprint.
10. Hirt and Block (2009), "Fundamentals of Investment Management", Tata-McGraw Hill Publishing Company Limited, Eighth Edition.

MK 6.3 CUSTOMER RELATIONSHIP MARKETING

LEARNING OBJECTIVES: To understand the concepts and principles of CRM, to appreciate the role and changing face of CRM as an IT enabled function, and to enable managing Customer Relationship

Unit 1: CRM CONCEPTS **10 Hrs.**

Acquiring Customers, Customer Loyalty and Optimizing Customer Relationships; CRM Definition; Success Factors -- The three levels of Service/ Sales Profiling; Service Level Agreements (SLAs), Creating and Managing effective SLAs.

Unit 2: CRM IN MARKETING **12 Hrs.**

One-to-one Relationship Marketing; Cross Selling & Up Selling; Customer Retention; Behavior Prediction - Customer Profitability & Value Modeling; Channel Optimization; Event-based marketing; CRM and Customer Service - The Call Centre, Call Scripting, Customer Satisfaction Measurement.

Unit 3: SALES FORCE AUTOMATION **12 Hrs.**

Sales Process, Activity; Contact- Lead and Knowledge Management; Field Force Automation; CRM links in E-Business; E-Commerce and Customer Relationships on the Internet; Enterprise Resource Planning (ERP); Supply Chain Management (SCM); Supplier Relationship Management (SRM); Partner Relationship Management (PRM)

Unit 4: ANALYTICAL CRM **12 Hrs.**

Managing and Sharing Customer Data; Customer Information Databases - Ethics and Legalities of Data use; Data Warehousing and Data Mining concepts; Data Analysis - Market Basket Analysis (MBA), Click stream Analysis, Personalization and Collaborative Filtering

Unit 5: CRM IMPLEMENTATION **10 Hrs.**

Defining Success Factors; Preparing a Business Plan Requirements, Justification and Processes; Choosing CRM Tools - Defining Functionalities - Homegrown versus Out-Sourced Approaches; Managing Customer Relationships - Conflict, Complacency; Resetting the CRM Strategy; Selling CRM Internally; CRM Development Team, Scoping and Prioritizing, Development and Delivery, Measurement

BOOKS FOR REFERENCE:

1. Alok Kumar Rai, Customer Relationship Management Concept & Cases, Prentice Hall of India Private Limited
2. S. Shanmugasundaram, Customer Relationship Management, Prentice Hall of India Private Limited
3. Kaushik Mukherjee, Customer Relationship Management, Prentice Hall of India Private Limited
4. Jagdish Seth, et al, Customer Relationship Management
5. V. Kumar & Werner J., Customer Relationship Management, Willey India

MK 6.4 LOGISTIC & SUPPLY CHAIN MANAGEMENT

LEARNING OBJECTIVE: To introduce the students to the Fundamentals of Logistics and Supply Chain Management Strategies and the Market Environment for Logistics and Supply Chain Management

Unit 1: INTRODUCTION TO SUPPLY CHAIN MANAGEMENT: **10 Hrs.**

Concept of Supply Chain Management, Importance and Scope of Supply Chain Management, Decision Phases in Supply Chain, Process view of Supply Chain, A Model of Supply Chain; Function of SCM, Integrated Supply Chain/Value chain, Supply Chain Management as a Management Philosophy, Focus areas of SCM, Enablers in Supply Chain, Supply Chain trends and challenges in India, Autonomous Supply Chain.

Unit 2: INTRODUCTIONS TO LOGISTICS: **08 Hrs.**

Meaning of Logistics and Logistics Management, Logistics Management to Supply Chain Management, Decision areas in Logistics; Key Players in Logistics; Role of Logistics in (a) Supply Chain, (b) the Economy, (c) the Organization; Role of Government in Logistics; Classification of Logistics Applications.

Unit 3: CUSTOMER FOCUS IN SUPPLY CHAIN MANAGEMENT: **10 Hrs.**

Customer service dimensions from a supply chain perspective (Order delivery lead time, Responsiveness, Delivery Reliability and Product Variety), Buyers Perspective, Suppliers Perspective, Stages of Development in Supplier Relations

Unit 4: SUPPLY CHAIN STRATEGIES: **09 Hrs.**

(i) Cycle View (ii) Push & Pull View of the Supply Chain, Supply Chain Responsiveness. Strategic Fit between Business Strategy and Supply Chain Strategy, Achievement of Strategic Fit through different steps, Obstacles to achieving Strategic Fit.

Unit 5: DEMAND MANAGEMENT IN SUPPLY CHAIN: **09 Hrs.**

Types of Demand, Role of Demand Forecasting in Supply Chain, Factors of Demand Forecast, Forecasting Methods, Basic approach to Demand Forecasting, Collaborative Planning, Forecasting and Replenishment (CPFR), Role of Aggregate Planning in a Supply Chain, CODP (Customer order decoupling point) and Marketing Environment for SCM.

BOOKS FOR REFERENCE:

1. Sunil Chopra & Peter Meindl, Supply Chain Management- Strategy, Planning and Operation, PHI
2. Dr. R.P. Mohanty & Dr. S.G. Deshmukh, Essentials of Supply Chain Management, Jaico Publishing House
3. David Simchi-Levi, Philip Kaminsky, Edith Simchi-Levi, Designing & Managing the Supply Chain, McGraw Hill
4. Janat Shah, Supply Chain Management Text and Cases, Pearson Education
5. Rahul V Altekar, Supply Chain Management – Concepts and Cases, PHI
6. Martin Christopher, Logistics and Supply Chain Management, Pitman Publishing, 2nd Edition

H.R 6.3 ORGNISATIONAL CHANGE AND DEVELOPMENT

LEARNING OBJECTIVE: The objective of this subject is to enable the students to understand need for Organizational Change and Development and the OD interventions for creating successful organizations.

Unit 1: ORGANIZATIONAL DEVELOPMENT **12 Hrs.**

Meaning and nature of Organizational Development (OD), competencies of an OD Practitioner, ethical guidelines for OD practitioners. Process of Organizational Development: Overview of entering and contracting Diagnosing: meaning of diagnosing, comprehensive model for diagnosing organizational systems (organizational level, group level and individual level). Collecting and analyzing diagnostic information: methods of collecting diagnostic data (Questionnaire, Interviews, Observations, Unobtrusive measures). Feeding back diagnostic information**:** Determining the content of feedback, possible effects of feedback, characteristics of feedback process, survey feedback.

Unit 2: CHANGE MANAGEMENT **10 Hrs.**

Introduction to Change Management**:** OD and Change**,** importance and nature of planned change; Theories of planned change- Action research model, Kurt Lewin's change model. Introducing change effectively**:** Basic steps, factors influencing change- resistance to change, overcoming resistance to change; empowering people to manage change, activities contributing to effective change management. Strategies for effecting change**:** Empirical–rational strategies, Normative - Re-educative strategies of changing, Power - Coercive strategies (meanings only).

Unit 3: OD INTERVENTIONS **14 Hrs.**

Designing effective OD interventions: How to design effective interventions, Overview of OD interventions - Human Process interventions, Techno Structural interventions, HRM interventions and Strategic change interventions, Conditions for optimal success of OD

(a) Human Process Interventions

T-Groups, process consultation, Third–party intervention; Team building; Organisation confrontation meeting, Inter-group relation intervention: microcosm group; Large group intervention: open –systems method, and open-space method

(b)Techno structural interventions

Restructuring organization: Structural design: functional structures, divisional structure- product structure, geographic and market structure, metrics structure, network structure, boundary less organization.
Downsizing: Meaning and tactics- Workforce reduction, organisational redesign, system redesign.
Re-engineering; meaning and application stages.
Employee involvement- parallel structures, TQM and high involvement organizations;
Work Design approaches: Engineering approach, Motivational approach, Sociotechnical Systems Approach

(c) Human resource Management Interventions

Overview of Performance management interventions: Performance Management Model, Goal setting, Performance Appraisal process, Reward systems.
Developing and assisting members- career planning, workforce diversity dimensions and interventions, employee stress and wellness interventions

Unit 4: STRATEGIC CHANGE INTERVENTIONS, EVALUATION & INSTITUTIONALISATION **12 Hrs.**

Strategic Change Interventions

Transformational Change: characteristics and differentiation with transactional change, culture change.
Continuous change: dynamic strategy making, self- designing organizations, learning organizations Trans-organizational change, mergers and acquisitions, strategic alliance interventions, network interventions

Evaluating and institutionalizing organisation development: Behavioural outcomes for measuring OD interventions, Institutionalisation framework (Organisation characteristics, intervention characteristics, Institutionalisation process, indicators of institutionalisation.)

Unit 5: OD IN GLOBAL SETTINGS **08 Hrs.**

Dimension/value, definition and customs for- Cultural Context, Power distance, Uncertainty avoidance, Achievement orientation, individualism

World-wide OD: Strategies and OD interventions (listing of OD); **Global social Change.**

Future of OD: The changing environment, Implications for OD's future, OD trends in the context of OD (economy, workforce, technology, organization), Implications for OD's future

BOOKS FOR REFERENCE:

1. Cummings and Worley (2007), Organization Development and Change ,Thomson- South western
2. Dunnette, M.D. (Ed.) (1976). Handbook of Industrial and Organizational Psychology. Chicago: Rand McNully.
3. French, W.L.; & Bell, C.H. Jr. (1980). Organizational Development. London, Prentice Hall.
4. Herbert, T.T. (1981). Dimensions of Organizational Behavior. London: MacMillan.
5. Khandwalla, P.N. (1988). Organizational effectiveness. In J. Pandey (Ed.) Psychology in India: The State-of-the Art (Vol.3, pp. 97-215). New Delhi: Sage.
6. Luthans, F. (1989). Organizational Behaviour. London: McGraw Hill.
7. Margulies, N.; & Raia, A.P. (1975). Organizational Development: Values, process and technology. New Delhi: Tata McGraw Hill,
8. McGill, M.E. (1977). Organizational Development for Operating Managers. AMACO (a division of American Management Association).
9. Pareek, U. &Rao, T.V. (1986). Designing and Managing Human Resources Systems. New Delhi: Oxford.
10. Rudrabasavaraj, M.N. (1977). Executive Development in India. New Delhi: Himalaya Publishing House.
11. Sharma, R.A. (1982). Organizational Theory and Behaviours. New Delhi: Tata McGraw Hill.

HR 6.4 COMPENSATION MANAGEMENT

LEARNING OBJECTIVE: The objective is to enable the students to understand the various aspects of Compensation Management

Unit 1: COMPENSATION MANAGEMENT **10 Hrs.**

Compensation – Meaning & Definitions - objectives –nature, Types of compensation Conceptual frame work of compensation management, Compensation philosophies, Compensation approaches Basis for compensation fixation. Compensation practices in different industries. Compensation practices of multinational and global organizations.

Unit 2: WAGE AND SALARY ADMINISTRATION **16 Hrs.**

Wage determination process and wage administration rules. Factors influencing wage and salary structure. Principles of wage and salary administration. Difference between salary and wages. Theories of wages – subsistence theory, wage fund theory, marginal productivity theory, bargaining theory. Criteria of wage fixation. Methods of wage determination in India

Unit 3: REWARDS AND INCENTIVES **14 Hrs.**

Statutory Provisions governing Different Components of Reward systems. Classification of Rewards; Monetary & Non- Monetary Incentives. Incentive Payments and its Objectives. Individual incentive plans Vs Group incentive plans. Administering incentive plans. Guidelines for Effectives Incentive Plans;

Unit 4: MANAGING EMPLOYEE BENEFITS **10 Hrs.**

Nature and types of benefits. Employee benefits programs- security benefits, retirement security benefits, health care benefits, time–off benefits. Fringe benefits - Features of Fringe Benefits; Fringe Benefits in India. Designing a Employee benefits package. Performance based pay systems. Employee benefits required by law. Discretionary major employee benefits

Unit 5: REGULATORY BODIES FOR COMPENSATION MANAGEMENT **06 Hrs.**

Wage Boards – structure, scope and functions, Pay Commissions, Wage administration in India Wage policies in India.

BOOKS FOR REFERENCE:

1. Compensation & Reward Management, BD Singh, Excel Books
2. Compensation, Milkovich & Newman, TMH
3. Strategic Compensation, Joseph J. Martocchio, 3rd Edition, Pearson Education
4. Compensation Management in Knowledge based world, Richard I. Anderson, 10th edition, Pearson Education
5. Compensation Management, Er Soni Shyam Singh, Excel Books.
6. Richard Thrope & Gill Homen : Strategic Reward Systems - Prentice-Hall.
7. Thomas. P. Plannery, David. A. Hofrichter & Paul. E. Platten: People, Performance & Pay – Free Press.
8. Michael Armstrong & Helen Murlis: Hand Book of Reward Management – Crust Publishing House.
9. Joseph. J. Martocchio: Strategic Compensation – A Human Resource Management Approach Prentice-Hall.
10. Edward. E. Lawler III: Rewarding Excellence (Pay Strategies for the New Economy) – Jossey -Bass.

BK 6.3 E-BANKING

LEARNING OBJECTIVES: Understanding of Core Banking, Understanding of Banking Channels and Payments, Practices on Banking Technology

Unit 1: INTRODUCTION TO E-BANKING **16 Hrs.**

Meaning, definition, features, advantages, and limitations- core banking, the evolution of e-banking in India, Legal framework for e-banking. Electronic Payment System Types of Electronic Payment Systems, Digital Token-based EPS, Smart Card EPS, Credit Card EPS, Risk in EPS, Designing a EPSE-banking Business Models Various models- home banking, office banking, online banking, internet banking, mobile banking, SMS banking,- models of electronic payments, other business models

Unit 2: DATA MANAGEMENT **10 Hrs.**

Induction of Techno Management Development Life Cycle, Project Management, Building Data Centres, Role of DBMS in Banking, Data Warehousing and Data Mining, RDBMS Tools.

Unit 3: BANKING TECHNOLOGY **08 Hrs.**

Technology in Banking Industry, Teleconferencing, Internet Banking, Digital Signature in Banking, MICR Facility for 'paper-based' clearing, Cheque Truncation

Unit 4: BANKING INNOVATIONS **12 Hrs.**

Technological Changes in Indian Banking Industry, Trends in Banking and Information Technology, Technology in Banking, Lead Role of Reserve Bank of India, New Horizons for Banking based IT, Automated Clearing House Operations, Electronic Wholesale Banking Credit Transfer, Credit Information Bureau (I) Ltd., Credit Information Company Regulation Bill- 2004, Automation in Indian Banks, Cheque clearing using MICR technology, Innovations, Products and Services, Core-Banking Solutions(CBS), human resource development.

Unit 5: RECENT TRENDS **10 Hrs.**

Dealing with Fraudulent transactions under CTS, Efficient customer service, smart quill computer pen, Institute for Development & Research in Banking & Technology (IDRBT).

BOOKS FOR REFERENCE:

1. IIBF "Technology in Banking Management "3rd Edition. Macmillan Education
2. Balachandran S., Digital banking,
3. Narendra Kumar and Narendra Kumar, "What Do computers Do in banks", Banking Finance, p-5, May, 2005

BK 6.4 TREASURY AND FOREX MANAGEMENT

LEARNING OBJECTIVE: Understanding of treasury management system, Treasury operations and having brief knowledge about Risk analysis in banking sector.

Unit 1: INTRODUCTION TO TREASURY MANAGEMENT. **12 Hrs.**

Concept & Evolution of Treasury [Including other important terminology in treasury:- Arbitrage; Bank Rate; Options; Capital Adequacy; Capital Fund; CRR; CDSL; Clearing House; DP; Hedging; LAF; OMOs; RTGS; Refinance; SLR; SWIFT; T-Bills; Tier-I & II Capital] , Objectives & Role of Treasury , Structure of Treasury & Functions of Treasurer, Scope & Functions of Treasury Management , Internal Treasury Control System, Role of Information Technology in Treasury Management [Negotiated Dealing System(NDS); Straight-Through-Processing(STP)]

Unit 2: TREASURY OPERATIONS. **12 Hrs.**

Liquidity Management [Objectives-CRR-SLR-RTGS-CCIL] , Treasury Management in Commercial Banks [NPA & Capital Adequacy Norms (CRAR); Investment Policy Statement; Back office support & Accounting] ,FOREX Market Operations [International Financial System & FOREX Market; Instrument traded; Exchange Rate mechanism; Indian FOREX market; RBI & Exchange Market] , Risk Management in Market Operations [Gilt-edged Markets; Exchange Rate & Currency Risk; Interest Risk Management] , Impact of Treasury Operations [Structural & Statutory changes; Need for Regulation; Development in Markets] , Practical Problems on FOREX Valuation [FEDAI Guidelines & Valuation]

Unit 3: RISK ANALYSIS & CONTROL, INTEREST RATE RISK: 10 Hrs.

Investment /Trading Book, Value at Risk [VaR] , FOREX (Market) Risk , Risk Management in banks [RBI Guidelines] , Treasury & Asset-Liability Management(ALM) [Meaning & Objectives of ALM; Market Risk-Liquidity & Interest Risk; Role of Treasury in ALM; Use of Derivatives in ALM; Policy Environment]

Unit 4: REGULATORY, SUPERVISING & COMPLIANCE FRAMEWORK; **12 Hrs.**

Ethics, Morals & Code of Conduct- The Dealing Room [General Principles from FIMMDA] ,RBI guidelines & Policy [Organizational set up; Industrial Sickness; NPAs in Scheduled Commercial banks] , Tax Environment in treasury [Corporate Taxation; Need for Tax Planning; Tax changes during 2004 to 2007 & at Present; Tax on Investments; Tax Compliance] , MIS for Treasury Operations [Current Monetary & Credit Policies; Fiscal & Budgetary Policies; Foreign Trade & Exchange Policies; Financial Market Trends; International Developments], Global framework in Treasury Operations.

Unit 5: FOREX IN INDIA; **10 Hrs.**

Concept and Significance of Foreign Exchange in India, Functions of Foreign Exchange Department, Foreign Exchange Markets, Role of RBI, Exchange Control – Objectives and Methods of Exchange Control, Exchange Control in India, -FEMA

BOOKS FOR REFERENCE:

1. Prasanna Chandra, “Investment & Portfolio Management”, Tata McGraw Hill, 2012.
2. S Kevin, “Security Analysis & portfolio Management”, PHI Learning, 2015.
3. Punithavathy Pandian, “Security Analysis and Portfolio Management”, Vikas Publishing, 2012.
4. Fischer & Jordan, “Security Analysis and Portfolio Management”, PHI, 6th Edition

IS 6.3 CYBER LAW

LEARNING OBJECTIVE: To make student understand the importance of Cyber law, cyber space security and legal aspects of Cyber security.

Unit 1: INTRODUCTION **10 Hrs.**

Cyber space: Definition, History of Cyber space, difference between Cyber space and physical space, Features of Cyber space, Advantages and Disadvantages of Cyber space

Cyber security: Definition, Need of cyber Security, Attributes of cyber Security, Authentication, Confidentiality, Integrity, Availability, Non-Repudiation.

Cyber Law: Definition, Introduction to Indian Cyber Law

Unit 2: INTRODUCTION TO CYBER CRIMES **15 Hrs.**

Cyber Crime: Definition of Cyber Crime & Computer related Crimes, Crimes targeting Computers, History, Development and Reasons for Growth of Cyber Crimes, Differentiation between traditional crime and cybercrimes. Types of Cyber Crime:(a) Data Theft (b) Hacking (c) Spreading Virus & Worms (d) Phishing (e) Cyber Stalking / Bullying (f) Identity Theft & Impersonation (g) Credit card & Online Banking Frauds (h) Obscenity, Pornography & Child Pornography (i) Cyber Defamation, Defacement, (j) Illegal online selling & Gambling (k) Denial of Service Attacks (l) Cyber terrorism (m)Software Piracy & illegal downloading

Unit 3 SECURITY FOR CYBER SPACE: **08 Hrs.**

Protecting Client Computers Communication channels and Webservers, Encryption, Decryption, Digital Signature, SSL Protocol, Firewalls, Cryptography methods, Virtual Private Networks.

Unit 4: LEGAL ASPECTS OF CYBER SPACE **15 Hrs.**

Evolution of the IT Act, Necessity, Salient features of the IT Act, 2000, Impact on other related Acts (Amendments): (a) Amendments to Indian Penal Code. (b) Amendments to Indian Evidence Act. (c) Amendments to Bankers Book Evidence Act. (d) Amendments to Reserve Bank of India Act.

Cyber Space Jurisdiction (a) Jurisdiction issues under IT Act, 2000. (b) Traditional principals of Jurisdiction (c) Extra-terrestrial Jurisdiction (d) Case Laws on Cyber Space Jurisdiction

E – commerce and Laws in India (a) Digital / Electronic Signature in Indian Laws (b) E – Commerce; Issues and provisions in Indian Law (c) E – Governance; concept and practicality in India (d) E – **Taxation issues in Cyberspace** (e) E – Contracts and its validity in India (f) Cyber Tribunal & Appellate Tribunal (g) Cyber Regulations

Unit 5: INTELLECTUAL PROPERTY RIGHTS **08 Hrs.**

Intellectual Property Rights, Domain Names and Trademark Disputes (a) Concept of Trademarks / in Internet Era (b) Cyber Squatting (c) Reverse Hijacking (d) Jurisdiction in Trademark Disputes (e) Copyright in the Digital Medium (f) Copyright in Computer Programmes (h) Concept of Patent Right

REFERENCE BOOKS:

1. Karnika Seth, Computers, Internet and New TechnologyLaws, Lexis Nexis Butterworths Wadhwa Nagpur, (2013).
2. Apar Gupta, Commentary on Information Technology Act, 2000, Lexis Nexis, (2015).
3. Verma S, K, Mittal Raman, Legal Dimensions of Cyber Space, Indian Law Institute, Delhi(2004)
4. Jonthan Rosenoer, Cyber Law, Springer, New York, (1997).
5. Sudhir Naib, The Information Technology Act, 2005: A Handbook, OUP, New York, (2011)
6. S. R. Bhansali, Information Technology Act, 2000, University Book House Pvt. Ltd. Jaipur (2003).
7. Vasu Deva, Cyber Crimes and Law Enforcement, Commonwealth Publishers, New Delhi, (2003).

IS 6.4 DBMS & SQL

(Database Management Systems and Sequential Query Language)

LEARNING OBJECTIVES: To familiarize students understand Database, Data modelling and Data language

Unit 1: INTRODUCTION TO DBMS **16 Hrs.**

Database and Database Users, Characteristics of the Database Approach, Different people behind DBMS, Implications of Database Approach, Advantages of using DBMS, when not to use a DBMS. Database System Concepts and architecture: Data Models, Schemas, and Instances. DBMS Architecture and Data Independence., Database languages and interfaces. The database system Environment, Classification of DBMS.

Unit 2: DATA MODELLING USING THE ENTITY-RELATIONSHIP MODEL **10 Hrs.**

High level conceptual Data Models for Database Design with and example., Entity types, Entity sets, attributes, and Keys, ER Model Concepts, Notation for ER Diagrams, Proper naming of Schema Constructs, Relationship types of degree higher than two.

Unit 3: FUNCTIONAL DEPENDENCIES AND NORMALIZATION FOR RELATIONAL DATABASE **10 Hrs.**

Informal Design Guidelines for Relational schemas, Functional Dependencies, Normal Forms Based on Primary Keys., General Definitions of Second and Third Normal Forms Based on Primary Keys., General Definitions of Second and Third Normal Forms, Boyce-Codd Normal Form.

Unit 4: RELATIONAL DATABASE LANGUAGE **10 Hrs.**

Introduction to SQL, Features of SQL, SQL Languages, DDL commands- Create, Add, Drop, Constraints in SQL, DML Commands – Insert, Delete, Update.

Unit 5: DATA QUERY LANGUAGE **10 Hrs.**

Where clause, Order by, Group by, DCL commands – Grant, Revoke, TCL Commands – Commit, Roll Back, Savepoint, Aggregate Functions, Relational Algebra.

LAB ACTIVITY:

1. The STUDENT detail databases have a table with the following attributes. The primary keys are underlined. STUDENT (regno: int, name: string, dob: date, marks: int)
   - Create the above table.
   - Remove the existing attributes from the table.
   - Change the date type of regno from integer to string.
   - Add a new attribute phoneno to the existing table.
   - Enter five tuples into the table.
   - Display all the tuples in student table.

2. A LIBRARY database has a table with the following attributes.

LIBRARY (bookid:int, title:string, author:string, publication:string, yearpub:int, price:real)

- Create the above table.
- Enter the five tuples into the table
- Display all the tuples in student table.
- Display the different publishers from the list.
- Arrange the tuples in the alphabetical order of the book titles.
- List the details of all the books whose price ranges between Rs. 100 and Rs. 300

3. The SALARY database of an organization has a table with the following attributes. EMPSALARY (empcod:int, empnamee:string, dob:date, department:string, salary:real)

- Create the above table.
- Enter the five tuples into the table
- Display all the number of employees working in each department.
- Find the sum of the salaries of all employees.
- Find the sum and average of the salaries of employees of a particular department.

BOOKS FOR REFERENCE:

1. Remez Elmasri and Shamkant B. Navathe, "Fundamentals of Database Systems", 5th Edition, Pearson Education, 2007.
2. Abrahamsi. Silberschatz, Henry. F. Korth, S. Sudarshan, "Database System Concepts" 6th Edition, McGraw Hill, 2012.
3. C.J.Date, "Introduction to database systems", Eight Edition, Addison Wesley, 2003.

IF 6.3 INTERNATIONAL AUDITING & ASSURANCE

LEARNING OBJECTIVE: This subject aims at imparting knowledge of International Auditing and Assurance.

Unit 1: AUDIT FRAMEWORK AND REGULATION **12 Hrs.**

External audit engagements – Objective and Meaning, types of assurance engagement, Concepts of Accountability, Stewardship and Agency, Elements of an Assurance Engagement, Regulatory environment – external audit, Mechanism to control auditors, Statutory Regulations: Appointment, Rights, Removal and Resignation of Auditors, Limitations of external audit, Corporate Governance – Objective and meaning, Directors responsibilities, Role and structure of Audit Committee, Fundamental principles of Professional Ethics, Audit threats and Safeguards, Role of External and Internal audit, Factors to assess – Internal audit, Limitations of internal audit, Outsourcing – Advantage and Disadvantage of outsourcing internal audit function, Format and Content of Audit Review Reports

Unit 2: PLANNING AND RISK ASSESSMENT **10 Hrs.**

Preconditions for Audit, Obtaining audit engagement, Engagement Letters - Contents, Quality Control Procedures, Overall objectives of the auditor and the need to conduct an audit, Components of audit risk, Concepts – Materiality and Performance Materiality, Materiality levels, Procedures to obtain initial understanding, Analytical procedures in planning, Compute and interpret key ratios used in analytical procedures, Effect of fraud and misstatements on the Audit Strategy, Responsibilities of internal and external auditors for the prevention and detection of fraud and error, Audit Planning – need and importance, Contents of the overall Audit Strategy and Audit Plan, Difference between an interim and final audit, Audit Documentation – Need, importance and contents, safe custody and retention of Working Papers

Unit 3: INTERNAL CONTROL **12 Hrs.**

Five components of Internal Control, How auditors record internal control systems, Evaluate internal control components including limitations and deficiencies, computer systems controls, Describe control objectives, control procedures, activities, and tests of control in relation to:
i) The sales system; ii) The purchases system iii) The payroll system iv) The inventory system v) The cash system vi) Non-current assets
Requirements and methods of how reporting significant deficiencies in internal control are provided to management

Unit 4: AUDIT EVIDENCE **12 Hrs.**

Assertions contained in the financial statements, audit procedures to obtain audit evidence, quality & quantity of audit evidence, problems associated with the audit and review of accounting estimates, control environment of smaller entities, Audit sampling – meaning and need, differences between statistical and non-statistical sampling – Examples and usage, Audit of specific items – Receivables, inventories, payables and accruals, bank and cash, tangible assets, intangible assets, non-current liabilities, provisions, and contingencies, Share capital, reserves and directors' emoluments, Computer-assisted audit techniques – Meaning and examples, Work of others – extent of reliance, extent to which reference to the work of others can be made in the independent auditor's report, Audit techniques to not-for profit organisation.

Unit 5: REVIEW AND REPORTING **10 Hrs.**

Subsequent events – Purpose, Indicators and Responsibilities and procedures to be undertaken, Going Concern – Definition and importance, Responsibilities of auditors and management regarding going concern, Written representations – Purpose, Procedure and Reliability, Circumstances when written representation can be obtained, Audit finalisation and review – Procedures and sufficiency of evidence, Dealing with Uncorrected Statements.

BOOKS FOR REFERENCE:

1 Audit & Assurance INT (ACCA) ISDC Becker Publishing
2 Audit & Assurance INT (ACCA) BPP Publishing
3 Audit & Assurance INT (ACCA) Kaplan Publishing
4 Auditing and Assurance for CA IPCC by Sanjib Kumar Basu
5 BN Tandon, Practical Auditing, Sultan Chand
6 Dr.Nanje Gowda, Principles of Auditing, VBH
7 Dr. Alice Mani: Principles & Practices of Auditing, SBH.
8 K. Venkataramana, Principles And Practice Of Auditing, SHBP.
9 MS Ramaswamy, Principles and Practice of Auditing.
10 DinakarPagare, Practice of Auditing, Sultan Chand
11 Kamal Gupta, Practical Auditing, TMH

IF 6.4 STRATEGIC BUSINESS REPORTING

Objective: The students will be able to understand and analyse the IFRS based financial statements and its reporting practices.

Unit 1: CONCEPTUAL FRAMEWORK OF FINANCIAL REPORTING 10 Hrs.

First time adoption of new accounting standards (IFRS), Revision of the Conceptual Framework, The IASB's Principles of Disclosure Initiative, Materiality in the context of financial reporting, Elements of Financial Statements

Unit 2: THE FINANCIAL REPORTING FRAMEWORK 10 Hrs.

The strengths and weaknesses of the accounting framework, qualitative characteristics of useful financial information, recognition, de-recognition and measurement of Elements of Financial Statements.

Unit 3: REPORTING THE FINANCIAL PERFORMANCE 16 Hrs.

Revenue (IFRS 15), Property, Plant and Equipment (IAS 16), Leases (IFRS 16), Employee benefits (IAS 19), Income taxes (IAS 12), Provisions, contingencies Liabilities and Assets (IAS 37), Share-based payment (IFRS 2), Fair Value Measurement (IFRS 13), Reporting requirements of small and medium-sized entities (SMEs). (Simple Problems)

Unit 4: FINANCIAL STATEMENTS OF GROUPS OF ENTITIES 06 Hrs.

Group accounting including statements of cash flows (IAS 7), joint arrangements (IFRS 11), Changes in group structures (IFRS 10). (Problems)

Unit 5: INTERPRET FINANCIAL STATEMENTS FOR DIFFERENT STAKEHOLDERS 14 Hrs.

Detailed discussion on the Contents of Annual Report, indicators of financial and nonfinancial performance including earnings per share and additional performance measures, Nature and extent of reportable segments, Disclosure of segment information, Management Discussion and Analysis, sustainability reporting.

BOOKS FOR REFERENCES:

1. IFRS for India, Dr. A. L. Saini, Snow white publications
2. Roadmap to IFRS and Indian Accounting Standards by CA Shibarama Tripathy
3. IFRS explained – A guide to International financial reporting standards by BPP learning Media
4. IFRS for finance executives by Ghosh T P, taxman allied services private limited
5. IFRS concepts and applications by Kamal Garg, Bharath law house private limited
6. IFRS: A Quick Reference Guide by Robert J. Kirk, Elsevier Ltd.
7. First lesson to International Financial Reporting Standards beginners guide by MP Vijay Kumar, prime knowledge services.
8. A student's guide to international financial reporting standards by Clare Finch, Kalpan Publishing.
9. Sariha Gosain and Rajeeh Gosain- Practical approach to IND AS implementation, illustrations, summary & comparisons

6.7 PRACTICALS ON SKILL DEVELOPMENT

Unit 1: INCOME TAX – II

- Compute Taxable business Income of a Proprietary concern in your vicinity, with imaginary figures.
- Compute Taxable Income and Tax Liability of any professional (Doctor or Advocate or Chartered Accountant etc.,) with imaginary data
- State the provisions for exemptions from capital gains under sections 54, 54B, 54D, 54EC and 54F.
- Ascertain the 'income from other sources' with at least ten items of your family / relative / friend.
- Identify the various deductions eligible to be claimed by an 'income-earning member' and calculate the amount of deduction under section 80.
- Compute the Tax Liability of at least 3 categories of individuals in your family / circle.

Unit 2: INDIAN ACOUNTING STANDARDS AND IFRS

- Explain the structure and functions of Indian Accounting Standards Board
- Set out the procedure for issue of an Accounting Standard by the Accounting Standards Board.
- List out the financial statements in accordance with Ind AS 1 and show the formats of the same with imaginary figures.
- Explain the main provisions of Ind AS 2, Ind AS 16 and Ind AS 18
- State and explain the provisions pertaining to Segment Reporting and Related Party Disclosure under Ind AS.
- Demonstrate the calculation of Minority Interest with imaginary figures.

UNIT 3: ELECTIVE PAPER 6.3 (FROM FIRST ELECTIVE GROUP)

UNIT 4: ELECTIVE PAPER 6.4 (FROM FIRST ELECTIVE GROUP)

UNIT 5: ELECTIVE PAPER 6.3 (FROM SECOND ELECTIVE GROUP)

UNIT 6: ELECTIVE PAPER 6.4 (FROM SECOND ELECTIVE GROUP)

NOTE:

3. Units 1 and 2 will be covered in the University Examination, and Units 3 to 6 will be covered in Internal Assessment.

4. In case of all elective papers, the Faculty teaching 'Practicals on Skill Development' shall design and administer any five practical application oriented exercises from each subject and evaluate the same as part of Internal Assessment.

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BE BOUNDLESS

BENGALURU CITY UNIVERSITY

SYLLABUS For B.Sc. CHEMISTRY
(I to VI Semester)

CHOICE BASED CREDIT SYSTEM

2020-2021

Proceedings of the meeting of the Board of Studies in Chemistry (UG) held on 20th March 2020 in the Department of Chemistry, Central College Campus, Bengaluru Central University, Bangalore – 560 001

A meeting of the Board of Studies in Chemistry (UG) was held on Friday, 20th March 2020 at 10.30. AM in the Department of Chemistry. The Chairman welcomed the members and placed before them the following agenda.

1. **Approval of B.Sc. Chemistry syllabus for the year 2020-21 batch onwards**

The committee members have gone through the syllabus of all the Six semesters and made several corrections in both theory as well as practicals and approved the syllabus.

The meeting ended with vote of thanks by the Chairman, Dept. of Chemistry, Bengaluru Central University, Central College Campus, Bangalore 560 001.

MEMBERS OF THE BOS (UG)		**Signature**
01. Prof. M. Pandurangappa	Chairman	20/03/2020
02. Prof. S. Hariprasad (co-opted)	Member	20/3/2020
03. Prof. V. R. Devaraju (co-opted)	Member	Absent
04. Dr. Shashikala Devi. K	Member	20/3/2020
05. Prof. Shamsiya Rizwana	Member	
06. Prof. Lalitha Masti Gowda	Member	

07. Prof. Udaya Kumar. S	Member	
08. Prof. B. Vijaya Babu	Member	
09. Dr. Nanda. N	Member	20/3/2020
10. Prof. L. Jayakumar	Member	20/3/2020
11. Dr. B.P. Dayananda	Member (External)	20/3/2020
12. Dr. Bibi Ahamadi Khatoon	Member (External)	20/3/2020

Dr. M. PANDURANGAPPA
Professor and Chairman
Department of Studies in Chemistry
Bengaluru Central University
Central College Campus,
BENGALURU - 560 001

BENGALURU CENTRAL UNIVERSITY.BENGALURU.

SCHEME OF EXAMINATION.

Title of the paper	Contact hours/Week	Exam. hours	IA	Marks	Total Marks	Credits
First Semester						
Chemistry-I	4	3	30	70	100	2
Chemistry Practical-I	3	3	15	35	50	1
Second Semester						
Chemistry-II	4	3	30	70	100	2
Chemistry Practical-II	3	3	15	35	50	1
Third Semester						
Chemistry-III	4	3	30	70	100	2
Chemistry Practical-III	3	3	15	35	50	1
Fourth Semester						
Chemistry-IV	4	3	30	70	100	2
Chemistry Practical-IV	3	3	15	35	50	1
Fifth Semester						
Chemistry-V	3	3	30	70	100	2
Chemistry Practical-V	3	3	15	35	50	1
Chemistry-VI	3	3	30	70	100	2
Chemistry Practical-VI	3	3	15	35	50	1
Sixth Semester						
Chemistry-VII	3	3	30	70	100	2
Chemistry Practical-VII	3	3	15	35	50	1
Chemistry-VIII	3	3	30	70	100	2
Chemistry Practical-	3	3	15	35	50	1

VIII						

B.Sc., - I Semester

Paper I –

SECTION – A **26 hrs**

Atomic Structure	**:**	**13 hrs**
Chemical Bonding and Molecular Structure	**:**	**13hrs**

1. Atomic Structure 13 hrs

Atomic Structure: Bohr's theory and its limitations, dual behavior of matter and radiation, de Broglie's relation, Heisenberg Uncertainty principle. Hydrogen atom spectra. Need of a new approach to Atomic structure.

What is Quantum mechanics? Time independent Schrodinger equation and meaning of various terms in it.Significance of ψ and ψ^2, Schrödinger equation for hydrogen atom. Radial and angular parts of the hydogenic wave functions (atomic orbitals) and their variations for 1s, 2s, 2p, 3s, 3p and 3d orbitals (Only graphical representation). Radial and angular nodes and their significance.Radial distribution functions and the concept of the most probable distance with special reference to 1s and 2s atomic orbitals. Significance of quantum numbers, orbital angular momentum and quantum numbers m_l and m_s. Shapes ofs, p and d atomic orbitals, nodal planes. Discovery of spin, spin quantum number (s) and magnetic spin quantum number (m_s).Rules for filling electrons in various orbitals, Electronic configurations of the atoms.Stability of half-filled and completely filled orbitals, concept of exchange energy.Relative energies of atomic orbitals, Anomalous electronic configurations.

2. Chemical Bonding and Molecular Structure 13 hrs

Ionic Bonding: General characteristics of ionic bonding. Energy considerations in ionic bonding, lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds.Statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability.Fajan's rules, ionic character in covalent compounds, bond moment, dipole moment and percentage ionic character.

Covalent bonding: VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements. Concept of resonance and resonating structures in various inorganic and organic compounds. MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their characteristics for s-s, s-p and p-p combinations of atomic orbitals, nonbonding combinationof orbitals, MO treatment of homonuclear diatomic molecules of 1st and 2nd periods (including idea of s-p mixing) and heteronuclear diatomic molecules such as CO, NO and NO^+. Comparison of VB and MO(approach)

Metallic bonding and semiconductors

SECTION – B 26hrs

Fundamentals of Organic Chemistry & Stereochemistry : 8hrs
Aliphatic Hydrocarbons : 9hrs
Aromatic hydrocarbons : 9 hrs

Fundamentals of Organic Chemistry 4 hrs

Bond cleavage - homolytic and heterolysis- Explanation with examples. Types of reagents: Electrophilic and nucleophilic reagents-definition and examples. Reactive intermediates - generation ,structure and relative stabilities of carbocation, carbanion, carbon free radicals, carbenes and nitrenes - explanation for relative stability and reactivity based on inductive, resonance and hyperconjugative effects. Types of reactions: addition, substitution and elimination- examples.

Isomerism:StructuralandStereoisomerism4 hrs

Chain, Position, functional, metamerism,tautomerism types explanation with an example.
Conformations with respect to ethane, butane and cyclohexane - energy profile diagrams. Interconversion of Wedge Formula, Newmann, Sawhorse and Fischer representations. Configuration- Geometrical: conditions, cistrans isomers. Optical isomerism- concept of chirality (upto two carbon atoms).

Aliphatic hydrocarbons 9 hrs

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Alkanes: Preparation: Corey- House reaction and Wurtz reaction - Comparison.

Reactions: free radical substitution: halogenation.

Alkenes: Preparation of Alkenes- cis alkenes (partial catalytic hydrogenation) and trans alkenes (Birch reduction), Wittig reaction-stereo selectivity to be mentioned. Reactions: cis-addition (alk. $KMnO_4$)and trans-addition (bromine), Addition of HX (Markownikoff's and anti-Markownikoff's addition)- mechanism, hydration, ozonolysis-significance, oxymercuration-demercuration,hydroboration-oxidation.

Dienes: Classification- isolated, conjugated, cumulated-one example. Structure of allene and butadiene. Reactions: i)1, 2-addition and 1, 4 addition reactions. ii)Diels Alder reaction: 1, 3-butadiene with maleic anhydride as an example.

Alkynes: Preparations–from vicinal and germinal halides

Reactions-Acidic nature of terminal alkynes: reaction with ammoniacal solutions of silver nitrate and cuprous chloride. Significance – conversion of lower terminal alkynes to higher alkynes. oxidation with $KMnO_4$, ozonolysis.

Aromatic hydrocarbons 9 hrs

Nomenclature: Mono, di and tri substituted benzene, Aromaticity: Criteria for aromaticity and Huckel's rule. Examples: cyclopropenylcation, cyclopentadienylanion, cycloheptatrieneylcation, benzene, naphthalene, anthracene and phenanthrene.

Anti-aromaticity: Features, examples cyclobutadiene,cyclopentadiene.

Non aromatics: examples butadiene, hexa-1,3,5-triene.

Preparation: Chloro,bromoandiodo-benzene:fromphenol,Sandmeyer

Electrophilic substitutions reaction: Nitration of benzene: mechanism, energy profile diagram, evidences for the formation of nitronium ion, kinetic isotopic effect.

Orienting influence of substituents: phenol, toluene, chlorobenzene, nitrobenzene towards electrophilic substitutions

Oxidations: Side chain oxidation of toluene to benzaldehyde and benzoic acid. Alkenyl benzenes: Styrene, preparation uses of styrene, cis and trans-stilbenes-structures and their preparations.

Reference Books:

1. Lee, J.D. Concise Inorganic Chemistry ELBS, 1991.
2. Cotton, F.A., Wilkinson, G. &Gaus, P.L. Basic Inorganic Chemistry, 3rd ed., Wiley.
3. Douglas, B.E., McDaniel, D.H. & Alexander, J.J. Concepts and Models in Inorganic Chemistry, John Wiley & Sons.
4. Huheey, J.E., Keiter, E.A., Keiter, R.L. &Medhi, O.K. Inorganic Chemistry: Principles of Structure and Reactivity, Pearson Education India, 2006.
5. Graham Solomon, T.W., Fryhle, C.B. &Dnyder, S.A. Organic Chemistry, John Wiley & Sons (2014).
6. McMurry, J.E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning India Edition, 2013.
7. Sykes, P. A Guidebook to Mechanism in Organic Chemistry, Orient Longman, New Delhi (1988).
8. Eliel, E.L. Stereochemistry of Carbon Compounds, Tata McGraw Hill education, 2000.
9. Finar, I.L. Organic Chemistry (Vol. I & II), E.L.B.S.
10. Morrison, R.T. & Boyd, R.N. Organic Chemistry, Pearson, 2010.
11. Bahl, A. &Bahl, B.S. Advanced Organic Chemistry, S. Chand, 2010.
12. Sykes, P. A Guidebook to Mechanism in Organic Chemistry, Orient Longman, New Delhi (1988).

B.Sc., II Semester
Paper II -

SECTION – A **26 hrs**

Chemical Energetics	**:**	**13 hrs**
Chemical Equilibrium	**:**	**13 hrs**

1. Chemical Energetics 13 hrs

First law of thermodynamics.Explanation of the terms – internal energy, enthalpy, heat, work, heat capacity.Derivation of expressions for work done in isothermal and adiabatic processes, the relationship between heat capacity at constant pressure and at constant volume.

Important principles and definitions of thermochemistry.Concept of standard state and standard enthalpies of formations, integral and differential enthalpies of solution and dilution.Calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data.Variation of enthalpy of a reaction with temperature – Kirchhoff's equation.

Second law of thermodynamics, spontaneous process, explanation of the terms- entropy

Efficiency - Efficiency in terms of heat engine, then Carnot heat engine has to be included

Gibb's free energy, chemical potential. Derivations: dG=VdP-SdT, Gibb's Helmholtz equation

statement of Third Law of thermodynamics, Nernst heat theorem and calculation of absolute entropies of substances.

2. Chemical Equilibrium 5 hrs

Free energy change in a chemical reaction.Thermodynamic derivation of the law of chemical equilibrium.Distinction between ΔG and ΔG^{o}, relationship between standard free energy change and equilibrium constant, Le Chatelier's principle. Relationships between Kp, Kc and Kx for reactions involving ideal gases.

Ionic Equilibrium 8 hrs

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pK values, pH scale, common ion effect. Salt hydrolysis- all types, calculation of hydrolysis constant.

(Constant Methods for determination of degree of hydrolysis _ from dissociation constants, conductometrric methods, from colligative methods, distribution method

Since the chapter is for 8 hours this can be included)

degree of hydrolysis and pH for different salts. Buffer solutions, Henderson's equations, Solubility and solubility product of sparingly soluble salts – applications of solubility product principle in qualitative analysis.

SECTION –B :Organic Chemistry 26 hrs

Alkyl halides and Aryl halides	:	**9 hrs**
Organometallic compound	:	**4 hrs**
Alcohols, Phenols, Ethers and Epoxides	:	**13 hrs**

Alkyl halides and Aryl halides: 9 hrs

Alkyl halides (Upto 5 Carbons)

Nomenclature, preparation from alkenes and alcohols.Reactions:hydrolysis, nitrite & nitro formation, nitrile &isonitrile formation. Williamson's ether synthesis

Types of Nucleophilic substitution reactions - SN^1,SN^2SNi, mechanisms with energy profile diagrams.Effect of a) Nature of alkyl groups b) Nature of leaving groups c) Nucleophiles and d) solvents on the rate of SN^1 and SN^2 reactions with examples.

Elimination reactions - E_1 and E_2 mechanisms and energy profile diagrams, Saytzeff elimination-mechanism,Eliminationvs substitution.

Aryl halides:

Preparation: Chloro,bromoandiodo-benzene from aniline -Sandmeyer reaction.Aromaticnucleophilic substitution SNAr mechanism,conversion to phenol and effect of nitro substituent. Benzyne mechanism, use of KNH_2/NH_3 or $NaNH_2/NH_3$ as strong bases.

Relative reactivity of alkyl, allyl, vinyl, aryl and aralkyl halides towards nucleophilic substitution.

Organometallic compounds4 hrs

Grignard reagents Preparation: Methyl magnesium iodide (conditions to be discussed). Syntheticapplications: Conversionof methyl magnesium iodide to pri,sec, teralchohols, ethanoic acid, ethanal ,propanone, ethanamine,

Organolithium compounds: preparation of methyllithium. synthetic applications: conversion of methyl lithium to methane andethanoic acid.

Lithiumdialkylcuprates-preparation: Lithium dimethyl cuprate from methyl iodide.

Synthetic applications-preparation of higher alkanes.

Alcohols, Phenols, Ethers and Epoxides 13 hrs

Alcohols: Introduction and classification. Methods of preparation from carbonyl compounds – reduction of aldehydes and ketones (by Meerwin-Pondorf-Verley reaction, reduction of acids and esters using $LiAlH_4$ and from alkenes.Reactions of alcohols-acidic nature, esterification, oxidation with $KMnO_4$,PCC,PDC,Oppaneur oxidation. Comparison of reactivity of pri, sec, and ter-alcohols, Lucas test and using potassium dichromate

Glycols - Preparation from alkenes, Reactions: oxidation with periodic acid with mechanism. Pinacol-Pinacolone rearrangement.

Glycerol- Preparation from propene, Reactions - nitration, action of concentratedsulphuricacid, oxidation with periodic acid and uses.

Phenols

Classification- mono,di and tri hydric phenols with examples

Acidic nature, comparison of acidic strength of alcohol, phenols and monocarboxylic acids.Effect of electron withdrawing group $-NO_2$ and electron donating group $-CH_3$ on acid strength of phenols at o,m,p- positions.

Reactions: Pechmann reaction-uses of coumarins,Reimer Tiemann. Kolbe-Schmidt, Schotten – Baumannreaction.

Industrial applications: Synthesis of aspirin, methyl salicylate, salol.

Ethers and Epoxides

Ethers:

Preparation of diethyl ether -dehydration of ethanol,Williamson's ether synthesis. Reactions: Ethers as Lewis bases (complexation with metal ions), cleavage of ethers - Zeisel's method- significance, auto oxidation.

Epoxides: Preparation -using per acids, Reactions: mono and 1, 2-disubstituted epoxides with a) carbon nucleophiles eg, CH_3MgI,nitrogen nucleophiles, eg NH_3, reduction with $LiAlH_4$.

Reference Books:

1. Graham Solomon, T.W., Fryhle, C.B. &Dnyder, S.A. Organic Chemistry, John Wiley & Sons (2014).
2. McMurry, J.E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning India Edition, 2013.
3. Sykes, P. A Guidebook to Mechanism in Organic Chemistry, Orient Longman, New Delhi (1988).
4. Finar, I.L. Organic Chemistry (Vol. I & II), E.L.B.S. □ Morrison, R.T. & Boyd, R.N. Organic Chemistry, Pearson, 2010.
5. Bahl, A. &Bahl, B.S. Advanced Organic Chemistry, S. Chand, 2010. □ Barrow, G.M. Physical Chemistry Tata McGraw-Hill (2007).
6. Castellan, G.W. Physical Chemistry 4th Ed. Narosa (2004).
7. Kotz, J.C., Treichel, P.M. & Townsend, J.R. General Chemistry Cengage Learning India Pvt. Ltd., New Delhi (2009).
8. Mahan, B.H. University Chemistry 3rd Ed. Narosa (1998). □ Petrucci, R.H. General Chemistry 5th Ed. Macmillan Publishing Co.: New York
9. Sykes, P. A Guidebook to Mechanism in Organic Chemistry, Orient Longman, New Delhi(1988).
10. Finar, I.L. Organic Chemistry (Vol. I & II), E.L.B.S. □ Morrison, R.T. & Boyd, R.N. Organic Chemistry, Pearson,2010.
11. Bahl, A. &Bahl, B.S. Advanced Organic Chemistry, S. Chand, 2010. □ Barrow, G.M.

Physical Chemistry Tata McGraw-Hill(2007).

B.Sc., - III Semester

Paper III -

SECTION – A **26 hrs**

Solutions	:	**6 hrs**
Phase Equilibria	:	**6 hrs**
Conductance	:	**7 hrs**
Electrochemistry	:	**7 hrs**

1. Solutions: 6 hrs

Thermodynamics of ideal solutions: Ideal solutions and Raoult's law, deviations from Raoult's law – non-ideal solutions. Vapour pressure-composition and temperaturecomposition curves of ideal and non-ideal solutions. Distillation of solutions.Lever rule.Azeotropes.

Partial miscibility of liquids: Critical solution temperature; effect of impurity on partial miscibility of liquids.

Immiscibility of liquids- Principle of steam distillation.Nernst distribution law and its applications.

2. Phase Equilibria 6 hrs

Phases, components and degrees of freedom of a system, criteria of phase equilibrium.Gibbs Phase Rule and its (thermodynamic derivation. Derivation of Clausius – Clapeyron equation and its importance in phase equilibriaDerivation of Clausius – Clapeyron equation and its importance in phase equilibria.)This portion can be shifted to Chemical energetics and its application in Phase rule can be specified)

Phase diagrams of one-component systems (water and sulphur) and two component systems involving eutectics, congruent and incongruent melting points (lead-silver, $FeCl_3$-H_2O and Na-K only).

3. Conductance 7 hrs

Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes.Kohlrausch law of independent migration of ions.Transference number and its experimental determination using Hittorf and Moving boundary methods.Ionic mobility. Applications of conductance measurements: determination of degree of ionization of weak electrolyte, solubility and solubility products of sparingly soluble salts, ionic product of water, hydrolysis constant of a salt.

4. Electrochemistry 7 hrs

Reversible and irreversible cells.Concept of EMF of a cell.Measurement of EMF of a cell.Nernst equation and its importance.Types of electrodes.Standard electrode potential.Electrochemical series. Thermodynamics of a reversible cell, calculation of thermodynamic properties: ΔG, ΔH and ΔS from EMF data. Calculation of equilibrium constant from EMF data. Concentration cells with transference and without transference. Liquid junction potential and salt bridge.pH determination using hydrogen electrode, Calomel, Glass and quinhydrone electrode. Problems.

SECTION –B 26hrs

Aldehydes and Ketones	**:**	**6 hrs**
Carboxylic acids and their derivatives	**:**	**8hrs**
Amines	**:**	**7hrs**
Carbohydrates	**:**	**5hrs**

Aldehydes and Ketones6 hrs

Nomenclature,preparation of aldehydes- Rosenmund reaction,Gattermann-Koch synthesis.Preparation of ketonesfrom nitriles,carboxylic acids with alkyl lithium, acid chlorides with metal alkyls.

Aldol condensation, Perkin condensation, Knoevenagel condensation, benzoin condensation-mechanisms, Mannich reaction.

Condensation with ammonia and its derivatives (NH_2–R, –NH_2, –NHPh, –OH, -CO-NH-NH_2).General mechanism.

Reduction using $LiAlH_4$ and $NaBH_4$, comparison.Wolff-Kishner reduction- example, Clemmensen reduction-mechanism.

Carboxylic acids and their derivatives 8hrs

Carboxylic acids:

Nomenclature,Classification- mono, di, tri carboxylic acids, hydroxy acids -lactic acid, tartaric acid and citric acid. Monocarboxylic acids:preparation - acid hydrolysis of nitriles with mechanism. Acidic strength-pKa values.Effect of substituents on the strength of aliphaticandaromatic carboxylic acids. Comparison of acid strength of formic and acetic acid, acetic acid and monochloro, dichloro, trichloro acetic acids, benzoic and p-nitrobenzoic acid, p-aminobenzoicacid, explanation.

Reactions: Formation of esters, acid chlorides, amides and anhydrides. Hell-Volhard-Zelinsky reaction, decarboxylation and reduction using $LiAlH_4$.

Di and tri carboxylic acids: Action of heat on dicarboxylic acids -oxalic acid, malonic acid, succinic acid, glutaric acid and adipic acid. Reactions of tartaric acid and citric acid -action of heat and reduction with HI.

Acid derivatives

Acid chlorides - hydrolysis, reaction with alcohol, ammonia and lithium dialkylcuprates.Acid anhydrides –acetic anhydride- hydrolysis, reaction with alcohol and ammonia. Amides -hydrolysis, reduction, Hoffmann degradation.

Esters - acid hydrolysis and alkaline hydrolysis, ammonolysis and alcoholysis.

Amines 7hrs

Classification, nomenclature, preparation of alkyl and aryl amines -reductive amination of carbonyl compounds,Gabriel phthalimide synthesis, reduction of nitrobenzene, Hoffmann's bromamide reaction. Relative basicity of amines in aqueous solution, explanation using inductive, resonance, steric and solvation effects.

Reactions- amines as nucleophiles (methylation and acylation), formation of quaternary ammonium salts (reaction of tertiary amine and alkyl halide),distinguishing reactions of 1^{o}, 2^{o} and 3^{o} amines (Reactions with equations for Hinsbergs test).

Diazotization: formation of benzene diazonium chloride. Synthetic applications – conversion to phenol,phenyl hydrazine, aniline, p-hydroxyazobenzene.

Carbohydrates:5hrs

Classification (based on number of monosaccharide units) with examples.Monosaccharides: definition with examples, classification of monosaccharides (based on functional group). Aldoses: Structures of D-aldohexoses. Elucidation of open chain structure of D-glucose. Limitations of open chain structure of glucose. Mechanism of mutarotation and anomeric effect.Elucidation of ring structure and size of D-glucose by oxidation with HIO_4. Ketoses: Structure of fructose-pyranose and furanose forms. Haworth structures. Epimers, Inter-conversion of glucose and fructose.

Disaccharides: Definition and examples. Formation of glycosidic bonds.Haworth and conformational structures of maltose, lactose and sucrose.

Reference Books:

1. Barrow, G.M. Physical Chemistry Tata McGraw-Hill (2007).
2. Castellan, G.W. Physical Chemistry 4th Ed. Narosa (2004).
3. Kotz, J.C., Treichel, P.M. & Townsend, J.R. General Chemistry, Cengage Learning India Pvt. Ltd.: New Delhi (2009).
4. Mahan, B.H. University Chemistry, 3rd Ed. Narosa (1998).
5. Petrucci, R.H. General Chemistry, 5th Ed., Macmillan Publishing Co.: New York (1985).
6. Morrison, R. T. & Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
7. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
8. Finar, I. L. Organic Chemistry (Volume 2), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
9. Nelson, D. L. & Cox, M. M. Lehninger's Principles of Biochemistry 7th Ed., W. H. Freeman.
10. Berg, J.M., Tymoczko, J.L. &Stryer, L. Biochemistry, W.H. Freeman, 2002
11. Sykes, P. A Guidebook to Mechanism in Organic Chemistry, Orient Longman, New Delhi(1988).
12. Bahl, A. &Bahl, B.S. Advanced Organic Chemistry, S. Chand, 2010. □ Barrow, GM. Physical Chemistry Tata McGraw-Hill(2007).

B.Sc., IV SEM
Paper - IV

SECTION –A Inorganic Chemistry 26 hrs

General Principles of Metallurgy	:	**5 hrs**
Transition Elements (3d series)	:	**8 hrs**
Coordination Chemistry & Crystal Field Theory	:	**13hrs**

1. General Principles of Metallurgy

Ellingham's diagram: principle, salient features, Curves corresponding to formation of CO, CO2 and oxides of Cr, Al, Mg, Ca, Hg, & Ag. Applications with reference to selection of reducing agents using Carbon for ZnO and Al for Cr2O3.

Extraction of the following metals i) Nickel from pentlandite ore ii) Thorium from monazite sand iii) Uranium from pitch blende

Powder metallurgy : Advantages of Powder metallurgy and its applications. Methods of production of metal powders.Production of Tungsten powder from Wolframite.

2.Transition Elements (3d series) 8 hrs

General group trends with special reference to electronic configuration, variable valency, colour, magnetic and catalytic properties, ability to form complexes and stability of various oxidation states (Latimer diagrams) for Mn, Fe and Cu.

Lanthanoids and actinoids: Electronic configurations, oxidation states, colour, magnetic properties, lanthanide contraction, separation of lanthanides (ion exchange method only).

3. Coordination Chemistry & Crystal Field Theory 13hrs

Coordination Chemistry: Valence Bond Theory (VBT): Inner and outer orbital complexes of Cr, Fe, Co, Ni and Cu (coordination numbers 4 and 6). Structural and stereoisomerism in complexes with coordination numbers 4 and 6. Drawbacks of VBT.IUPAC system of nomenclature.

Crystal Field Theory: Crystal field effect, octahedral symmetry. Crystal field stabilization energy (CFSE), Crystal field effects for weak and strong fields. Tetrahedral symmetry.Factors affecting the magnitude of D. Spectrochemical series.Comparison of CFSE for Oh and Td complexes, Tetragonal distortion of octahedral geometry.Jahn-Teller distortion, Square planar coordination.

SECTION –B

: Physical Chemistry 26 hrs

Kinetic Theory of Gases	:	**10 hrs**
Liquids	:	**3 hrs**
Solids	:	**6 hrs**
Chemical Kinetics	:	**7 hrs**

1. Kinetic Theory of Gases: 10 hrs

Postulates of Kinetic Theory of Gases and derivation of the kinetic gas equation. Deviation of real gases from ideal behavior, compressibility factor, causes of deviation. van der Waals equation of state for real gases. Boyle temperature (derivation not required). Critical phenomena, critical constants and their calculation from van der Waals equation.Andrews isotherms of CO_2.

Maxwell Boltzmann distribution laws of molecular velocities and molecular energies (graphic representation – derivation not required) and their importance. Temperature dependence of these distributions.Most probable, average and root mean square velocities (no derivation). Collision cross section, collision number, collision frequency, collision diameter and mean free path of molecules. Viscosity of gases and effect of temperature and pressure on coefficient of viscosity (qualitative treatment only).

2. Liquids 3 hrs

Surface tension and its determination using stalagmometer.Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).

3. Solids 6 hrs

Forms of solids.Symmetry elements, unit cells, crystal systems, Bravais lattice types and identification of lattice planes. Laws of Crystallography - Law of constancy of interfacial angles, Law of rational indices. Miller indices.X–Ray diffraction by crystals, Bragg's law.Structures of NaCl, KCl and CsCl (qualitative treatment only).Defects in crystals.Glasses and liquid crystals.

4. Chemical Kinetics 7 hrs

The concept of reaction rates.Effect of temperature, pressure,catalyst and other factors on reaction rates.Order and molecularity of a reaction.Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants).Half–life of a reaction.General methods for determination of order of a reaction.Concept of activation energy and its calculation from Arrhenius equation. Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only).problems.

Kinetic study of reactions between hydrogen peroxide and iodide ion in acid medium by and saponification of ethyl acetate by conductometric method

Reference Books:

1. Barrow, G.M. Physical Chemistry Tata McGraw-Hill (2007).
2. Castellan, G.W. Physical Chemistry 4th Ed. Narosa (2004).
3. Kotz, J.C., Treichel, P.M. & Townsend, J.R. General Chemistry Cengage Learning India Pvt. Ltd., New Delhi (2009).
4. Mahan, B.H. University Chemistry 3rd Ed. Narosa (1998).
5. Petrucci, R.H. General Chemistry 5th Ed. Macmillan Publishing Co.: New York (1985).
6. Cotton, F.A. & Wilkinson, G. Basic Inorganic Chemistry, Wiley.
7. Shriver, D.F. & Atkins, P.W. Inorganic Chemistry, Oxford University Press.
8. Wulfsberg, G. Inorganic Chemistry, Viva Books Pvt. Ltd.
9. Rodgers, G.E. Inorganic & Solid State Chemistry, Cengage Learning India Ltd., 2008

B.Sc., V SEM
Paper - V - Physical Chemistry

SECTION – A **20 hrs**

Optical methods of Analysis	**:**	**16hrs**
Photochemistry	**:**	**4 hrs**

1. Molecular Spectroscopy **16 hrs**

Molecular Spectroscopy: Interaction of electromagnetic radiation with molecules and various types of spectra; Born Oppenheimer approximation.

Rotation spectroscopy: Selection rules, intensities of spectral lines, determination of bond lengths of diatomic and linear triatomic molecules, isotopic substitution.

Vibrational spectroscopy: Classical equation of vibration, computation of force constant, amplitude of diatomic molecular vibrations, anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic molecules, modes of vibration, concept of group frequencies. Vibration-rotation spectroscopy: diatomic vibrating rotator, P, Q, R branches.

Raman spectroscopy: Qualitative treatment of Rotational Raman effect; Effect of nuclear spin, Vibrational Raman spectra, Stokes and anti-Stokes lines; their intensity difference, rule of mutual exclusion.

Electronic spectroscopy: Franck-Condon principle, electronic transitions, singlet and triplet states, fluorescence and phosphorescence, dissociation and predissociation, calculation of electronic transitions of polyenes using free electron model.

Nuclear Magnetic Resonance (NMR) spectroscopy: Principles of NMR spectroscopy, Larmor precession, chemical shift and low resolution spectra, different scales, spin-spin coupling and high resolution spectra, interpretation of PMR spectra of organic molecules.

Electron Spin Resonance (ESR) spectroscopy: Its principle, hyperfine structure, ESR of simple radicals.

2. Photochemistry 4 hrs

Characteristics of electromagnetic radiation, Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws of photochemistry, quantum yield, actinometry, examples of low and high quantum yields, photochemical equilibrium and the differential rate of photochemical reactions, photosensitised reactions, quenching. Role of photochemical reactions in biochemical processes, photostationary states, chemiluminescence.

SECTION –B

: Analytical Methods in Chemistry 20 hrs

Qualitative and quantitative aspects of analysis	:	**3 hrs**
Thermal methods of analysis	:	**3 hrs**
Electroanalytical method	:	**5 hrs**
Separation techniques	:	**9 hrs**

1. Qualitative and quantitative aspects of analysis 3 hrs

Sampling, evaluation of analytical data, errors, accuracy and precision, methods of their expression, normal law of distribution of indeterminate errors, statistical test of data; F, Q and t test, rejection of data, and confidence intervals.

2. Thermal methods of analysis 3 hrs

Theory of thermogravimetry (TG), basic principle of instrumentation.Techniques for quantitative estimation of Ca and Mg from their mixture.

3. Electroanalytical method 5 hrs

Classification of electroanalytical methods, basic principle of pH metric, potentiometric and conductometric titrations. Techniques used for the determination of equivalence points. Techniques used for the determination of pKa values.

4. Separation techniques. 9hrs

Too much chromatic Technics included, it requires more than 9 hours

Solvent extraction: Classification, principle and efficiency of the technique. Mechanism of extraction: extraction by solvation and chelation. Technique of extraction: batch, continuous and counter current extractions. Qualitative and quantitative aspects of solvent extraction: extraction of metal ions from aqueous solution, extraction of organic species from the aqueous and non-aqueous media.

Chromatography: Classification, principle and efficiency of the technique. Mechanism of separation: adsorption, partition & ion exchange. Development of chromatograms: frontal, elution

and displacement methods. Qualitative and quantitative aspects of chromatographic methods of analysis: IC, GLC, GPC, TLC and HPLC.

Reference Books:

1. Banwell, C. N. &McCash, E. M. Fundamentals of Molecular Spectroscopy 4th Ed. Tata McGraw-Hill: New Delhi (2006).
2. Chandra, A. K. Introductory Quantum Chemistry Tata McGraw-Hill (2001). House, J. E. Fundamentals of Quantum Chemistry 2nd Ed. Elsevier: USA (2004).
3. Lowe, J. P. & Peterson, K. Quantum Chemistry, Academic Press (2005).
4. Kakkar, R. Atomic & Molecular Spectroscopy: Concepts & Applications, Cambridge University Press (2015).
5. Jeffery, G.H., Bassett, J., Mendham, J. & Denney, R.C. Vogel's Textbook of Quantitative Chemical Analysis, John Wiley & Sons, 1989. □
6. Willard, H.H., Merritt, L.L., Dean, J. &Settoe, F.A. Instrumental Methods of Analysis, 7th Ed. Wadsworth Publishing Company Ltd., Belmont, California, USA, 1988.
7. Christian, G.D; Analytical Chemistry, 6th Ed. John Wiley & Sons, New York, 2004.
8. Harris, D. C. Exploring Chemical Analysis, Ed. New York, W.H. Freeman, 2001.
9. Khopkar, S.M. Basic Concepts of Analytical Chemistry. New Age, International Publisher, 2009.
10. Skoog, D.A. Holler F.J. &Nieman, T.A. Principles of Instrumental Analysis, Cengage Learning India Ed.
11. Mikes, O. Laboratory Hand Book of Chromatographic & Allied Methods, Elles Harwood Series on Analytical Chemistry, John Wiley & Sons, 1979.

B.Sc., - V Semester

PAPER VI - Biochemistry

SECTION – A-Energetics and Gene Regulation **20 hrs**

Introduction to Biochemistry	:	**2 hrs**
Energetics of Biochemical Reactions	:	**4 hrs**
Vitamins	:	**2 hrs**
Enzymes	:	**3 hrs**
Nucleic Acids	:	**3 hrs**
Information Flow in Biological Systems	:	**4 hrs**
Hormones	:	**2 hrs**

1. Introduction to Biochemistry 2 hrs

Contributions of Emil Fischer, Louis Pasteur, Embden, Mayerhof, Parnas, Hans Kreb, Michaelis and Menton, Watson and Crick, Chargaff, H.G. Khorana, Knoop, Pauling and Hopkins.

Elemental and biochemical composition of living organisms.Role of water in biochemical systems (mention the properties dielectric constant, surface tension, heat of vaporization, MP and BP, specific heat).

2. Energetics of Biochemical Reactions 4 hrs

Bioenergetics: Introduction – stages of energy transformation. Exergonic and endergonic reactions.Relationship between ΔG^{o} and K_{eq}. High Energy Phosphates- Definition with examples; ATP, PEP,1,3-diphosphoglycerate, creatinephosphate-structural features that makes them high energy compounds. Redox potentials of some biological important half reactions, Calculation of energy yield from biological redox reaction (Oxidation of NADH and $FADH_2$ by oxygen, reduction of acetaldehyde by NADH). Mitochondrial electron transport chain with brief explanation of P/O ratio and ATP Synthase complex.Oxidative Phosphorylation.Substrate Level Phosphorylation.Definition of anabolism and catabolism with suitable example.

3. Vitamins 2hrs

Introduction and Definition of vitamins, Classification of vitamins based on solubility, Sources, Biological significance and deficiency syndrome of each vitamin.

4. Enzymes 3 hrs

Introduction, Holo enzyme (apo-enzyme and co-enzyme).Active site and specificity, Classification of enzymes with examples.Enzyme substrate interaction-Fischer and Koshland models. Enzyme kinetics- factors affecting rate of enzymatic reactions- enzyme concentration, substrate concentration, pH and temperature, M.M equation with significance. Enzyme Inhibiton-Competitive, non-competitive and uncompetitive, Allosteric inhibition with one example for each.

5. Nucleic Acids 3hrs

Components of nucleic acids- Nitogen bases, sugars.Structure of nucleosides, nucleotides and polynucleotides (DNA and RNA), Biological roles of DNA and RNA.Properties of nucleic acids-with acids and bases, temperature stability of nucleic acids, Nucleic acids as genetic materials.

Protein-nucleic acid interaction- chromatin and viral nuclear capsids.

6. Information Flow in Biological Systems **4 hrs**

Central dogma of Molecular biology, Replication, transcription and translation. Genetic code-general features. Mutation-sickle cell anaemia.

7. Hormones **2 hrs**

Definition.Classification-amino acid derivatives, peptide and polypeptide and Steroid hormones with functions. Tropic hormones (hormones released by adrenals and hypothalamus). Role of Insulin and Glucagon in glucose homeostasis.Feedback regulation, secondary messengers-Ca^{2+}, cyclic AMP.

SECTION –B - Biomolecules of Life **20 hrs**

Carbohydrates	:	**4 hrs**
Carbohydrate Metabolism	:	**3 hrs**
Lipids	:	**4 hrs**
Lipid Metabolism	:	**2 hrs**
Amino Acids and Proteins	:	**5 hrs**
Protein Metabolism	:	**2 hrs**

1. Carbohydrates **4hrs**

Introduction and Classification of carbohydrates with examples. Derivatives of monosaccharides-Amino sugars-Haworth structure and biological importance of β-D-glucosamine, galactosamine and their N-acetylated forms: (NAMA, NANA). Sugar Acids- Haworth structure and biological importance of D-gluconic acid, D-glucuronic acid and D-glucaric acid. Sugar Phosphates- Haworth structure and biological importance of D-Glucose-6-phosphate, D-Fructose-6-phosphate, D-Fructose-1,6-diphosphate, β-D-ribose-5-phosphate and β-D-deoxyribose-5-phosphate. Haworth structure and biological importance of oligosaccharides-Isomaltose, Cellobiose, Trehalose.Polysaccharides-partial structure and biological function of starch, glycogen, cellulose, chitin and inulin.

2. Carbohydrate Metabolism **3hrs**

Glycolysis, fates of pyruvate, TCA cycle, Energetics. Gluconeogenesis –synthesis of glucose from lactate.

3. Lipids **4hrs**

Introduction, Classification- simple, complex and derived with examples.Solubility of lipids. Fatty acids- definition, classification – saturated and unsaturated with examples and structure of lauric, myristic, palmitic, stearic, oleic, linoleic, linolenic and arachidonic acids. Essential fatty acids-definition with examples.

Triglycerides- Structure and properties- acid and alkali hydrolysis, saponification number and its significance, Biological importance of triglycerides.

Phosphoglycerides- General Structure of 3-Sn-phosphatidic acid, lipid bilayer, micelles, liposomes with applications, structure and biological importance of lecithin, cephalin, phosphatidylserine, phosphatidylinositol.

Cholesterol- structure and biological significance

4. Lipid Metabolism 2hrs

Activation of fatty acids, role of carnitine, β-oxidation and energetics.

5. Amino Acids and Proteins 5 hrs

α-amino acids: Introduction, structure, classification on the basis of polarity of R-groups, essential and Non-essential amino acids, zwitter ion, reaction of amino acids with Nihydrin, Peptide Bond. Sanger, Edman's reactions and their significance.

Proteins-brief study of enzyme and muscle proteins, Levels of Organizations of Protein: Primary, secondary, tertiary and quaternary structures with examples (α- helix, β-pleated sheet, triple helix and haemoglobin) Denaturation and renaturation: Aufinsen's experiment, separation of proteins by PAGE.

6. Protein Metabolism2hrs

Transamination, deamination and decarboxylation.Urea Cycle.

Recommended Books/References:

1. Morrison, R. T. & Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Finar, I. L. Organic Chemistry (Volume 2), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
4. Nelson, D. L. & Cox, M. M. Lehninger's Principles of Biochemistry 7th Ed., W. H. Freeman.
5. Berg, J. M., Tymoczko, J. L. &Stryer, L. Biochemistry 7th Ed., W. H. Freeman
6. Concise Text Book of Biochemistry T. N. Pattabhiraman, All India Publishers, 2000.
7. Biochemistry A. L. Lehninger. al., CBS, 2000.
8. A Text Book of Biochemistry A. V. S. S. Rama Rao, UBSPD, 1998.
9. Biochemistry P. C. Champe and R. A. Harvey, J. B. Lipincott& Co, 1982.
10. Fundamentals of Biochemistry J. L. Jain, S. Chand & Co., 1983.
11. Biochemistry COSIP-ULP, Bangalore University, 1981.
12. Outlines of Biochemistry Conn E. E and Stumpf P. K., John Wiley & Sons, 1978.
13. General Biochemistry Weil J. H., Wiley Eastern
14. Biochemistry Campbell M. K., Harcourt Brace & Co.
15. Essentials of Biochemistry U Sathyanarayana.
16. Principles of Biochemistry Nelson and Cox.
17. Biochemistry Pawar and Chatwal.

18. Biochemical techniques Upadhyay and Upadhyay

19. Analytical Biochemistry and Biochemical techniques Ashokan P

B.Sc., VI Semester

PAPER VII - Inorganic Chemistry

SECTION – A

: Inorganic materials of industrial importance 20hrs

Fertilizers	:	**4 hrs**
Silicate Industries: Glass Ceramics and Cement	:	**6 hrs**
Surface Coatings (paints)	:	**4hrs**
Chemical explosives	:	**2 hrs**
Alloys	:	**4 hrs**

Fertilizers 4 hrs

Different types of fertilizers. Manufacture of the following fertilizers: Urea, ammonium nitrate, calcium ammonium nitrate, ammonium phosphates; polyphosphate, superphosphate, compound and mixed fertilizers, potassium chloride, potassium sulphate.

Silicate Industries 6 hrs

Glass: Glassy state and its properties, classification (silicate and non-silicate glasses). Manufacture and processing of glass. Composition and properties of the following types of glasses: Soda lime glass, lead glass, armoured glass, safety glass, borosilicate glass, fluorosilicate, coloured glass, photosensitive glass.

Ceramics: Important clays and feldspar, ceramic, their types and manufacture. High technology ceramics and their applications, superconducting and semiconducting oxides, fullerenes carbon nanotubes and carbon fibre.

Surface Coatings 4 hrs

Objectives of coatings surfaces, preliminary treatment of surface, classification of surface coatings.Paints and pigments-formulation, composition and related properties. Oil paint, Vehicle, modified oils, Pigments, toners and lakes pigments, Fillers, Thinners, Enamels, emulsifying agents. Special paints (Heat retardant, Fire retardant, Eco-friendly paint, Plastic paint), Dyes, Wax polishing, Water and Oil paints, additives, Metallic coatings (electrolytic and electroless), metal spraying and anodizing

Chemical explosives 2 hrs

Origin of explosive properties in organic compounds, preparation and explosive properties of lead azide, PETN, cyclonite (RDX).Introduction to rocket propellants.

Alloys **4 hrs**

Classification of alloys, ferrous and non-ferrous alloys, Specific properties of elements in alloys. Manufacture of Steel (removal of silicon decarbonization, demanganization, desulphurization dephosphorisation) and surface treatment (argon treatment, heat treatment, nitriding, carburizing). Composition and properties of different types of steels.

SECTION- B:

Industrial Chemicals, Environmentand Novel inorganic solids 20 hrs

Nanomaterials	:	**4 hrs**
Synthesis and modification of inorganic solids	:	**2 hrs**
Industrial Gases and Inorganic Chemicals	:	**10 hrs**
Energy and Environment	:	**4 hrs**

Nanomaterials 4 hrs

Overview of nanostructures and nanomaterials: classification. Preparation of gold and silver metallic nanoparticles, self-assembled nanostructures-control of nanoarchitecture-one dimensional control.Carbon nanotubes and inorganic nanowires.Bio-inorganic nanomaterials, DNA and nanomaterials, natural and antisicalnanomaterials, bionano composites.

Synthesis and modification of inorganic solids 2 hrs

Conventional heat and beat methods, Co-precipitation method, Sol-gel methods, Hydrothermal method, Ion-exchange and Intercalation methods.

Industrial Gases and Inorganic Chemicals 10 hrs

Industrial Gases: Large scale production, uses, storage and hazards in handling of the following gases: oxygen, nitrogen, argon, neon, helium, hydrogen, acetylene, carbon monoxide, chlorine, fluorine, sulphur dioxide and phosgene.

Inorganic Chemicals: Manufacture, application, analysis and hazards in handling the following chemicals: hydrochloric acid, nitric acid, sulphuric acid, caustic soda, common salt, borax, bleaching powder, sodium thiosulphate, hydrogen peroxide, potash alum, chrome alum, potassium dichromate and potassium permanganate.

Energy &Environment 4 hrs

Sources of energy: Coal, petrol and natural gas. Nuclear Fusion / Fission, Solar energy, Hydrogen, geothermal, Tidal and Hydel, etc. Nuclear Pollution: Disposal of nuclear waste, nuclear disaster and its management.

Reference Books:

1. E. Stocchi: Industrial Chemistry, Vol-I, Ellis Horwood Ltd. UK.
2. R. M. Felder, R. W. Rousseau: Elementary Principles of Chemical Processes, Wiley Publishers, New Delhi.
3. W. D. Kingery, H. K. Bowen, D. R. Uhlmann: Introduction to Ceramics, Wiley Publishers, New Delhi.
4. J. A. Kent: Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.
5. P. C. Jain & M. Jain: Engineering Chemistry, DhanpatRai& Sons, Delhi.
6. R. Gopalan, D. Venkappayya, S. Nagarajan: Engineering Chemistry, Vikas Publications, New Delhi.
7. B. K. Sharma: Engineering Chemistry, Goel Publishing House, Meerut
8. E. Stocchi: Industrial Chemistry, Vol-I, Ellis Horwood Ltd. UK.
9. R.M. Felder, R.W. Rousseau: Elementary Principles of Chemical Processes, Wiley Publishers New Delhi.
10. J. A. Kent. Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.
11. S. S. Dara: A Textbook of Engineering Chemistry, S. Chand & Company Ltd. New Delhi.
12. K. De, Environmental Chemistry: New Age International Pvt., Ltd, New Delhi.
13. S. M. Khopkar, Environmental Pollution Analysis: Wiley Eastern Ltd, New Delhi.
14. S.E. Manahan, Environmental Chemistry, CRC Press (2005).
15. G.T. Miller, Environmental Science 11th edition. Brooks/ Cole (2006).

A. Mishra, Environmental Studies. Selective and Scientific Books, New Delhi (2005).

16. Shriver & Atkins. Inorganic Chemistry, Peter Alkins, Tina Overton, Jonathan Rourke,
17. Mark Weller and Fraser Armstrong, 5th Edition, Oxford University Press (2011-2012)
18. Adam, D.M. Inorganic Solids: An introduction to concepts in solid-state structural chemistry. John Wiley & Sons, 1974.
19. Poole, C.P. & Owens, F.J. Introduction to Nanotechnology John Wiley & Sons, 2003.
20. Rodger, G.E. Inorganic and Solid State Chemistry, Cengage Learning India Edition, 2002.

PAPER VIII
ORGANIC CHEMISTRY

SECTION-A:

Application of spectroscopy to simple organic compounds	**:**	**10 hrs**
Active Methylene Compounds	**:**	**3 hrs**
Stereo chemistry	**:**	**7 hrs**

Application of spectroscopy to simple organic compounds : 10 hrs

Introduction: electromagnetic spectrum, advantages of spectroscopic techniques, types of spectroscopic techniques (UV-Visible spectroscopy, IR spectroscopy, NMR spectroscopy).

UV-Visible spectroscopy: Introduction – basic principles of UV-Visible spectroscopy. Types of electronic transitions with suitable examples.Chromophores and auxochormes (examples).Blue shift and red shift (with examples). Influence of conjugation on λ_{max} absorption in UV – Visible region. Comparison of UV spectra of acetone and methyl vinyl ketone. Graphical representation of spectra of 1,3-butadiene, benzene and lycopene. Advantages of UV-Visible spectroscopy.

IR spectroscopy: Introduction – Basic principles of IR spectroscopy. Conditions for IR active organic compounds. Vibrational transitions: Stretching and bending modes of vibrations, factors affecting on position of IR absorption peak (atomic mass and force constant-electronic effects and hydrogen bonding). Types of IR region (functional group region and finger print region). Explanation of stretching frequencies of –OH (free and H-bonded), alkyl –C–H, alkenyl C-H, alkynyl C-H,C=C, C=C, C–C, C=O and C–O groups (IR spectra of acetaldehyde, acetone, ethanol, ethylene, benzene, acetylene, acetic acid and phenol).Applications of IR spectroscopy.

NMR spectroscopy: Basic principles of proton magnetic resonance: Nuclear magnetic spin quantum number, influence of the magnetic field on the spin of nuclei, spin population, nuclear magnetic resonance. Chemical shift (δ values), uses of TMS as reference. Nuclear shielding and deshielding effects.Equivalent and non-equivalent protons.Effect of electronegativity of adjacent atoms on chemical shift values.Spin-spin splitting and spin-spin coupling (qualitative treatment only). Graphical representation (interpretation) of NMR spectra of simple organic compounds (i) methane (ii) CH_3–Cl (iii) CH_2Cl_2 and (iv) $CHCl_3$ using shielding and deshielding effects, (iv) Cl_2CHCHO (v) 1,1,2-trichloroethane and (vi) CH_3CH_2Cl using spin-spin splitting and spin-spin coupling.

Active Methylene Compounds 3 hrs

Acidity of α-hydrogen atoms in active methylene compounds. ex-diethylmalonate, ethyl acetoacetate and acetyl acetone.

Diethyl malonate -preparation from acetic acid.Synthetic applications -preparation of monocarboxylic, dicarboxylic, unsaturated acids, ketones, cyclic compounds-barbituric acid.

Ethyl acetoacetate-preparation from ethyl acetate.Synthetic applications of ethyl acetoacetate - preparation of monocarboxylic, dicarboxylic, unsaturated acids, ketones.

Stereo chemistry **7 hrs**

Introduction:optical isomerism, optical activity, dextro and laevo rotatory molecules (d/l, +/–),specific rotation, criteria for optical activityi) Elements of symmetry: plane, center, alternate axis of symmetry–definition, examples

Molecular chirality, enantiomers- absoluteconfiguration D/L notations, R/S notations-Cahn-Ingold-Prelog sequence rules to be explained taking suitable examples, meso compounds, diastereomers and properties. Relative Configuration of threo and erythro isomers.

Racemisation: Definition and mechanism,Resolution of racemic mixture: definition, explanation of resolution of racemic mixture of tartaric acid by chemical method and biochemical method.

Atropisomerism- diphenyl systems.

Geometric isomerism in alkenes: definition, conditions,examples. Determination of configuration of geometric isomers: cis and trans by (i) Physical methods (melting and boiling points, dipole moments, solubility) (ii)Spectroscopic methods (UV, IR evidences) (iii)chemical methods - cyclisation method pKavalues E and Z system of nomenclature -rules with suitable examples.

SECTION-B:

Pharmaceutical chemistry	:	**4hrs**
Polymers	:	**3 hrs**
Terpenes and Alkaloids	:	**7hrs**
Heterocyclic compounds	:	**4 hrs**
Green chemistry	:	**2 hrs**

Pharmaceutical chemistry **4hrs**

Classification of Drugs: analgesics and antipyretics,anti-inflammatory drugs-aspirin, paracetamol, lbuprofen, antibiotics (Chloramphenicol); antibacterial and antifungal Sulphonamides; Sulphanethoxazol, Sulphacetamide, Trimethoprim, antiviral drugs -Acyclovir, Central Nervous System agents- phenobarbital, diazepam, Cardiovascular-Glyceryltrinitrate, HIV-AIDS drugs (AZT-Zidovudine).

Polymers **3 hrs**

Brief introduction to preparation, structure, properties and application of the following polymers:polyolefins,polystyreneandstyrenecopolymers,polyvinylchloridepolyvinyl acetate, acrylic polymers, fluoro polymers, polyamides. Phenol formaldehyde resins -Bakelite, Novalac, polyurethanes, silicone polymers,polydienes, polycarbonates, Conducting Polymers- properties, preparation of polyacetylene, polyaniline, polypyrrole, polythiophene

Terpenes and Alkaloids: **7hrs**

Terpenes

Occurrence, isoprene rule, special isoprene rule, isolation of essential oils.classification (on the basis of number of isoprene units, acyclic and cyclic)

Citral: elucidation of structure and synthesis from methyl heptenone ,

Zingiberene: preparation from p-methoxymethylmagnesium bromide.

structures of limonene, menthol, α-terpineol, camphor, β-carotene, vitamin-A and their uses.

Alkaloids

Introduction, classification (based on heterocyclic ring present) and general characteristics.Determination of functional nature of nitrogen- Hoffmann's exhaustive methylation method. Nicotine:elucidation of structure and synthesis from succinimde.Structures and uses of ephedrine, caffeine, cocaine, atropine, quinine and morphine.

Heterocyclic compounds **4 hrs**

Introduction, classification (based on size of heterocyclic ring – 5 and 6 membered)

with examples, stability-resonance and aromaticity, molecular orbital structures, resonance and aromaticity of furan, pyrrole, thiophene and pyridine based on Huckel's rules.Preparation: pyrrole from acetylene,furan from furrfural,

thiophene from acetylene, pyridine from acetylene. Electrophilic substitution reactions-nitration of pyrrole, furan and thiophene, reaction with sodamide (Chichibabin reaction).Comparison of basicity of pyrrole, pyridine and piperidine (pK_b).

Fused heterocyclic compounds i)Indole – preparation by Fischer synthesis, nitration of indole.

Green chemistry: **2hrs**

Introduction: Definitions of Green Chemistry. Brief introduction of twelve principles of Green chemistry with examples, special emphasis on atom economy, reducing toxicity, green solvents.Green Chemistry and catalysis.Alternative sources of energy-green energy and sustainability.

Reference Books:

1. Peter Sykes: A Guide Book to Mechanism in Organic Chemistry, Orient Longman.
2. ArunBahl and B. S. Bahl : Advanced Organic Chemistry, S. Chand.
3. Morrison, R. T. & Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (PearsonEducation).
4. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
5. Finar, I. L. Organic Chemistry (Volume 2), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
6. John R. Dyer: Applications of Absorption Spectroscopy of Organic Compounds, Prentice Hall.
7. R.M. Silverstein, G.C. Bassler& T.C. Morrill: Spectroscopic Identification of Organic Compounds, John Wiley &Sons.
8. Anastas, P.T. & Warner, J.K. Green Chemistry- Theory and Practical, Oxford University

Press (1998).
9. Matlack, A.S. Introduction to Green Chemistry, Marcel Dekker (2001).
10. Cann, M.C. &Connely, M.E. Real-World cases in Green Chemistry, American Chemical Society, Washington (2000).
11. Ryan, M.A. &Tinnesand, M. Introduction to Green Chemistry, American Chemical Society, Washington (2002).
12. Sharma, R.K.; Sidhwani, I.T. &Chaudhari, M.K. Green Chemistry Experiments: A monograph I.K. International Publishing House Pvt Ltd. New Delhi, Bangalore.
13. Lancaster, M. Green Chemistry: An introductory text RSC publishing, 2nd Edition.
14. G.L. Patrick: Introduction to Medicinal Chemistry, Oxford University Press, UK.
15. Hakishan, V.K. Kapoor: Medicinal and Pharmaceutical Chemistry, VallabhPrakashan, Pitampura, New Delhi.
16. William O. Foye, Thomas L., Lemke, David A. William: Principles of Medicinal Chemistry, B.I. Waverly Pvt. Ltd. New Delhi

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BE BOUNDLESS

BENGALURU CITY UNIVERSITY

B.Sc Syllabus
Chemistry Practical's

CHOICE BASED CREDIT SYSTEM

2020-2021

BENGALURU CENTRAL UNIVERSITY.BENGALURU.

CHEMISTRY PRACTICALS.

CHEMISTRY PRACTICALS - I

1. Calibration of glass wares: i) Pipette ii) Burette iii) Volumetric flask
2. Estimation of potassium permanganate using standard sodium oxalate solution.
3. Estimation of ferrous ammonium sulphate using standard potassium dichromate solution and diphenyl amine as internal indicator.
4. Estimation of Sodium thiosulphate using standard potassium dichromate solution.
5. Determination of percentage of available chlorine in the given sample of bleaching powder.
6. Determination of percentage of manganese dioxide from pyrolusite ore.
7. Estimation of Chloride by Mohr's method (using potassium chromate as an adsorption indicator).
8. Estimation of ferrous and ferric iron in a given mixture using standard potassium dichromate
9. Estimation of Nitrogen in an ammonium salt using standard oxalic acid solution.
10. Estimation of Carbonate and bicarbonate in a given mixture.
11. Estimation of potassium permanganate using standard ferrous ammonium sulphate solution and calculation of water of crystallization.
12. Estimation of copper by iodimetric method.
13. Estimation of sodium hydroxide using standard potassium hydrogen phthalate

CHEMISTRY PRACTICALS – II

1. Purification of compounds – recrystallization and distillation
2. Criteria of purity - determination of melting point and boiling point.
3. Preparation of 7-hydroxy-4-methyl coumarin from resorcinol.
4. Preparation of dibenzal acetone from benzaldehyde.
5. Nitration - Preparation of m-nitrobenzoic acid from benzoic acid.
6. Nitration - Preparation of meta-dinitro benzene from nitro benzene.
7. Preparation of Nerolin or beta-Naphthyl methyl ether from beta-naphthol.
8. Preparation of 2,4-dinitrophenyl hydrazone derivative of benzaldeyde.
9. Acetylation - Preparation of acetanilide from aniline.
10. Bromination - Preparation of tribromophenol from phenol.

CHEMISTRY PRACTICAL – III

Semi-micro qualitative analysis of a salt mixture – not more than four ionic species.

(Two anions and two cations excluding insoluble salts) out of the following:

Cations: NH_4^+, Pb^{2+}, Ag^+ , Bi^{3+}, Cu^{2+},Cd^{2+}, Sn^{2+}, Al^{3+}, Fe^{3+}, Co^{2+}, Cr^{3+},

Ni^{2+}, Zn^{2+}, Mn^{2+}, Ba^{2+}, Ca^{2+}, Sr^{2+}, K^+

Anions: CO_3^{2-}, S^{2-}, SO_3^{2-}, $S_2O_3^{2-}$, NO_2^-, CH_3COO^-, Cl^-,Br^-, I^-, NO_3^-, BO_3^{3-}, SO_4^{2-}, PO_4^{3-},

CHEMISTRY PRACTICAL - IV

1. Determination of the density using specific gravity bottle and viscosity of a liquid/dilute solution using Ostwald's viscometer.
2. Determination of percentage composition of a binary liquid mixture by viscosity method/Study of variation of viscosity of an aqueous solution with concentration of a solute.
3. Determination of molar mass of a polymer by viscosity method.
4. Determination of the density using specific gravity bottle and surface tension of a liquid/dilute solution using stalagmometer.
5. Determination of transition temperature of a salt hydrate by thermometric method.
6. To determine the concentration of a given solution by measuring surface tension of solution/Study of variation of surface tension of a detergent solution with concentration.
7. Determination of velocity constant for acid hydrolysis of methyl acetate.
8. Determination of velocity constant for the saponification of ethyl acetate.(a= b)
9. Study of kinetics of iodide-persulphate reaction.
10. Comparison of the strengths of HCl and H_2SO_4 by studying kinetics of acid hydrolysis
11. Determination of distribution coefficient of benzoic acid between water and toluene. or Iodine between water and carbon tetrachloride

CHEMISTRY PRACTICAL - V (PHYSICAL CHEMISTRY)

1. To construct the phase diagram of a two component system (Ex. Diphenyl amine-benzophenone) by cooling curve method.
2. Determination of pK_a of a weak acid by pH metric method.
3. Determination of cell constant and molar conductance at infinite dilution.
4. Conductometric titrations: (i) Strong acid - strong base
   (ii) Weak acid - strong base.
5. Determination of degree of dissociation of a weak acid and dissociation constant by conductance measurements.

6. Estimation of Cu^{2+} colorimetrically and verification of Beer-Lambert's law.
7. Potentiometric titrations: (i) Strong acid – strong base
   (ii) Potassium dichromate – Mohr's salt.

8. Determination of percentage composition of sodium chloride solution by miscibility temperature measurements of phenol-water system. (Study of effect of impurities on it)

CHEMISTRY PRACTICAL - VI (BIOCHEMISTRY)

1. Determination of Saponification number of Fats
2. Estimation of α-amino acids using Ninhydrin by colorimetric method.
3. Separation of α-amino acids by paper chromatography
4. Determination of activity of salivary amylase.
5. Preparation of buffers and determination of pH values of fruit juices using pH meter.
6. Isolation of DNA from Onion peel or Cauliflower.
7. Estimation of ascorbic acid in lemon juice or green chillies.
8. Estimation of reducing sugar by dinitrosalicylicacid (DNS) method.
9. Estimation of Inorganic phosphate by modified Fiske-Subbarow Method.
10. Estimation of creatinine in urine by Jaffe's Method.

CHEMISTRY PRACTICAL - VII (INORGANIC CHEMISTRY)

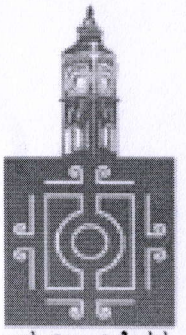
1. Preparation of complexes: (i) tetraamminecopper(II)sulphate (ii) potassium trioxalatoferrate(III) – determination of their conductance and comparison with simple salts like $MgCl_2$, $AlCl_3$,..
2. Determination of the composition of Fe^{3+}-salicylic acid complex by Job's method
3. Gravimetric Estimation of Barium as Barium sulphate.
4. Estimation of Zn^{2+} using EDTA.
5. Estimation of Mg^{2+} using EDTA.
6. Estimation of Ni^{2+} using EDTA.
7. Determination of total hardness of water using EDTA
8. Estimation of percentage of iron in haematite ore.
9. Determination of calcium in the given sample of Lime stone
10. Gravimetric estimation of nickel as Nickel dimethyl glyoximate.
11. Chromatographic separation of Al^{3+}, Fe^{3+}, Cr^{3+} and calculation of R_f values.

CHEMISTRY PRACTICAL - VIII (ORGANIC CHEMISTRY)

Systematic qualitative analysis of organic compounds possessing following functional groups (-COOH, phenolic, aldehydic, ketonic, amide, nitro, amines and esters) and preparation of one solid derivative

Reference Books:

- Svehla, G. *Vogel's Qualitative Inorganic Analysis*, Pearson Education, 2012.
- Mendham, J. *Vogel's Quantitative Chemical Analysis*, Pearson, 2009
- Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., *Textbook of Practical Organic Chemistry*, Prentice-Hall, 5th edition, 1996.
- Graham Solomon, T.W., Fryhle, C.B. & Dnyder, S.A. *Organic Chemistry,* John Wiley & Sons (2014). McMurry, J.E. *Fundamentals of Organic Chemistry*, 7th Ed. Cengage Learning India Edition, 2013.
- Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longman, 1960.
- Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry,* R.Chand & Co.: New Delhi (2011).
- Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry,* Universities Press.
- Jeffery, G.H., Bassett, J., Mendham, J. & Denney, R.C. *Vogel's Textbook of Quantitative Chemical Analysis*, John Wiley & Sons, 1989.
- Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. *Instrumental Methods of Analysis*, 7th Ed. Wadsworth Publishing Company Ltd., Belmont, California, USA,1988..
  Ditts, R.V. *Analytical Chemistry; Methods of Separation*, van Nostrand, 1974.
- Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longma
- Keith Wilson and John Walker: Practical Biochemistry
- Sawhney, S.K., Randhir Singh. Introductory Practical Biochemistry, 2000, Narosa publisher
- Geetha Damodaran K., Practical Biochemistry, 2nd edition, 2016, Jaypee Brothers Medical Publishers
- Harwood Series on Analytical Chemistry, John Wiley & Sons, 1979.



BENGALURU CITY UNIVERSITY

SYLLABUS For B.Sc ELECTRONICS
(I & IV Semester)

CHOICE BASED CREDIT SYSTEM

2020-2021

BENGALURU CENTRAL UNIVERSITY
Department of Electronics

Proceedings of Board of Studies (UG) in Electronics held on 27th Febrauary 2019 at 2 PM in Department of Electronic Science, J.B. Campus, Banglore University, Banglore -560 056.

Members Present | **Signature**

1. Dr. J.T. Devaraju
   Professor, Dept. of Electronic Science,
   Bangalore University, Bangalore-56
   — Chairman — 27/2/19

2. Sri. Ramesh B Patil
   Assoc. Professor, Dept. of Electronics, HKES
   Veerendrapatil Degree College, 11th main, 11th cross,
   Sadashivanagar, Bangalore-80
   — Member

3. Sri. Revanasiddappa S Masali
   Assoc. Professor, Dept. of Electronics, HKES
   Veerendrapatil Degree College, 11th main, 11th cross,
   Sadashivanagar, Bangalore-80
   — Member

4. Dr. M. Subramanya Bhat
   Assoc. Professor, Dept. of Electronics, Vijaya College,
   R.V. Road, Basavanagudi, Bangalore.
   — Member ← ABSENT →

5. Sri. R. Mallikarjuna Shetty
   Assoc. Professor, Dept. of Electronics, Vijaya College,
   R.V. Road, Basavanagudi, Bangalore.
   — Member

6. Sri. K.M Thipperudra Swamy
   Assoc. Professor, Dept. of Electronics, Vivekananda
   Degree College, Rajajinagar, Bangalore.
   — Member

7. Sri. Vijayakumar A Patil
   Asst. Professor, Dept. of Electronics, Basaveshwara
   College of Arts, Science & Commerce, Rajajinagar,
   Bangalore.
   — Member — ABSENT —

8. Dr. Godwin D'Souza,
   Assoc. Professor, Dept. of Electronics, St. Jpseph's
   College of Arts & Science (Autonomous), Lalbhagh
   Road, Bangalore.
   — Member — ABSENT —

9. Dr. Rekha Annigere, Asst. Professor, Dept. of
   Electronics, GFGC, Kalaburgi

The Chairman extended a warm welcome to the members and then the agenda was taken up for discussion.

Syllabus for B.Sc I to IV semester in Electronics was prepared and discussed. The board resolved to approve I to IV semester syllabus for B.Sc in Electronics to be implemented effective from academic year 2019-20 and onwards

The Chairman of the BOS thanked members for attending the meeting.

Dr. V.T. Devaraju 27/2/19
Professor and Chairman,
Dept. of Electronic Science,
Bangalore University,
Bangalore-560056

BENGALURU CENTRAL UNIVERSITY
Central College Campus, Dr.B.R. Ambedkar Veedi, Bangalore -56001.

Syllabus

Subject: Electronics (UG) (Effective from 2020-21)

Semester/ Teaching Hours	Title of the Paper	Hours /week		Max.Marks/paper				Duration of Exam (hours)		Total Marks / paper	Credits
				Theory		Practical					
		Theory	Practical	Exam	IA	Exam	IA	Theory	Practical		
Semester I (52 hours)	Basic Electronics (EL-101T and EL-101P)	4	3	70	30	35	15	3	3	150	4 +2= 6
Semester II (52 hours)	Electronics circuits and special purpose devices (EL-201T and EL-201P)	4	3	70	30	35	15	3	3	150	4 +2= 6
Semester III (52 hours)	Linear integrated circuits and C-Programming (EL-301T and EL-301P)	4	3	70	30	35	15	3	3	150	4 +2= 6
Semester IV (52 hours)	Digital Electronics and Verilog (EL-401T and EL-401P)	4	3	70	30	35	15	3	3	150	4 +2= 6
Semester V (40 +40 hours)		3	3	70	30	35	15	3	3	150	3+2=5
		3	3	70	30	35	15	3	3	150	3+2=5
Semester VI (40 +40 hours)		3	3	70	30	35	15	3	3	150	3+2=5
		3	3	70	30	35	15	3	3	150	3+2=5

Note: Internal assessment marks will be based on attendance, assignment & tests.
In addition to this, internal assessment marks may be awarded for the report submitted by the students towards industrial/Exhibition visits/field visits/study tour

1)
2)
3)
4)
5)
6)
7)

Dr. M. T. Devaraju
Professor and Chairman,
Dept. of Electronic Science,
Bangalore - 560 056

B.Sc. Electronics Syllabus
Semester I – Paper 1
EL-101T BASIC ELECTRONICS

Unit 1: **10 hours**

Basic Circuit Concepts
Review of R, L and C
Voltage and current sources: Ideal and practical, conversion from voltage source to current source and vice versa, numerical problems.
DC Transient Analysis: Series RC Circuit- Charging and discharging with initial charge (mention only - no derivations), graphical representation, time constant. RL Circuit with Initial Current, Time Constant, growth and decay equations (mention only), numerical problems.
AC Circuit Analysis: Series RC and RL circuits, Impedance of series RC & RL circuits, Series and parallel RLC circuit, series and parallel resonance, condition for resonance, resonant frequency, band width, significance of quality factor, numerical problems.
Transformer: Principle, construction and working.
Switches: SPST, SPDT, DPST and DPDT, fuse and electromagnetic relay, MCB and ELCB, RCCB– brief note on each.

Unit 2: **08 hours**

Review of KVL and KCL
Circuit Analysis: Kirchhoff's Current Law (KCL), Kirchhoff's Voltage Law (KVL), voltage divider and current divider rules, concept of open and short circuits, Node voltage Analysis, Mesh voltage Analysis, Star-Delta Conversion (no derivations).
Network Theorems: Superposition theorem, Thevenin's theorem, Norton's theorem. Reciprocity theorem (statement only), Maximum Power Transfer theorem (derivation), problems on all theorems (DC analysis only).

Unit 3: **12 hours**

Semiconductor Diode and its Applications
P-N Junction Diode: Ideal diode and diode approximations – representations. Review of PN junction diode, Zener diode and their characteristics, Zener and Avalanche Junction Breakdown Mechanism.
Diode Rectifiers: HWR, FWR (center tapped and bridge type), Circuit diagram, working and waveforms, ripple factor & efficiency (no derivations) and numerical problems.
Filters: Types of filters, circuit diagram and explanation of shunt capacitor filter with waveforms.
Voltage Regulators: Zener diode as regulators, circuit diagram and explanation for load and line regulation, numerical problems on load regulation, disadvantages of Zener diode regulator, Transistor series regulator circuit diagram and working.
Fixed and Variable IC Regulators: IC 78xx and IC 79xx -concepts only, IC LM317- output voltage equation (mention only) and simple numerical problems.

Unit 4: **14 hours**

Bipolar Junction Transistors (BJT): Types of BJT (mention only), Construction, principle & working of NPN transistor, terminology. Transistor configurations, Definition of α, β and γ and their interrelations, leakage currents (mention only), numerical problems. Study of CE

Characteristics with experimental circuit and procedure. Study of CB Characteristics, Concept of Base width modulation-Early effect.

Hybrid Parameters: Definitions, hybrid model of CE configuration.

Transistor Biasing: Need for biasing, DC load line, operating point (Q point), thermal runaway, stability and stability factor (mention the equation-no derivation).

Different Types of Biasing: Mention different biasing circuits. Voltage divider bias, effect of R_E on stability, circuit diagrams and its working. DC analysis of voltage divider bias (Q point analysis), numerical problems.

Transistor as a switch: circuit and working. Darlington pair and its applications,

Field Effect Transistor (FET): Types of FET, construction and working of N- channel Junction Field Effect Transistor (JFET), characteristics, FET parameters and their relationships. Comparison of FET with BJT.

Unit 5: **8 hours**

Number Systems: Binary, hexadecimal – conversion from binary to decimal and vice-versa, binary to hexadecimal and vice-versa, decimal to hexadecimal and vice versa, addition and subtraction of binary numbers and hexadecimal numbers. Subtraction using 2's complement method, signed number arithmetic – addition.

Codes: BCD code: 8421, 2412, excess-3 Code. Gray code, self-complementing property. Gray to binary conversion and vice versa. Parity generator and checker alphanumeric codes.

Text books:

1. A Text book of Electronics, R.S.Sedha, S Chand and Co., 3rd edition, 2012.
2. Electronic Principles, Albert Malvino & David J Bates, TMH, 7th edition-2010
3. Introductory circuit analysis, Robert Boylstead, PHI 5th edition-2010.

Reference books:

1. Electronic Devices and circuit theory, Robert Boylstead and Louis Nashelsky, 9th Edition, 2013, PHI
2. Basic electronics- B.L. Theraja - S. Chand and Co. 3rd edition -2012.
3. Electronics text lab manual, Paul B. Zbar.
4. Electric circuits, JoesephEdminister, Schaums series.
5. Electric circuits Book 1,Schaums series - Syed. A. Nasar. Mc-Graw hill edition.
6. Basic Electronics and Linear circuits, N.N. Bhargava, D.C. Kulshresta and D.C 1. Gupta-TMH.
7. Electronic devices, David A Bell, Reston Publishing Company/DB Tarapurwala Publ.
8. Principles of Electronics By V.K. Mehta, S.Chand & Co.
9. Electronic devices, applications and Integrated circuits, Mathur, Kulshreshta and Chadha, Umesh Publications.

Semester I - Practical I

EL-101P BASIC ELECTRONICS LAB

PART A (Demonstration experiments- not for evaluation)

1. Identification and description of Electronic Components, and their circuit symbols.
2. Familiarization of Electronic instruments: Digital Multimeter, DC Regulated Power Supply-fixed and variable, Function Generator and C.R.O.

PART B (Experiments to be performed)

1. Series resonance
2. Verification of Thevenin's theorem
3. Verification of Super position theorem
4. Verification of Maximum power transfer theorem.
5. V-I Characteristics of a Zener diode.
6. Half wave Rectifier – without and with shunt capacitance filter.
7. Full wave bridge rectifier – without and with shunt capacitance filter.
8. Zener diode as voltage regulator – load and line regulation.
9. Transistor characteristics in CE mode – determination of ri, ro and β.
10. Transistor characteristics in CB mode – determination of ri and α.
11. Study of the I-V Characteristics of JFET
12. Design and study of voltage divider biasing.

Note: Minimum of 8 experiments to be performed

B.Sc. Electronics Syllabus
Semester II – Paper 2
EL-201T ELECTRONIC CIRCUITS AND SPECIAL PURPOSE DEVICES

Unit 1 **12 hours**

Small Signal Amplifiers: Classification of amplifiers based on different criteria, small signal CE amplifier circuit, working and frequency response. r_e model of CE amplifier, derivation for Av, expressions for Zin and Zout. Numerical problems on Av, Zin and Zout. Need for swamped amplifier, circuit diagram of Swamped amplifier, expressions for Av & its applications. Circuit diagram, importance & applications (mention only) of CC-amplifier.

Multistage Amplifiers: Qualitative study of cascaded stages, overall gain of multistage amplifier, loading Effect, numerical problems.

Types of coupling: RC coupled, transformer coupled and direct coupled multi stage amplifier (only circuit diagrams and frequency response graph, advantages and disadvantages for each). Darlington amplifier circuit diagram and its characteristic features.

JFET Amplifier: circuit and operation of JFET amplifier in CS mode, equivalent circuit, derivation for Av, Numerical problems.

Unit 2 **8 hours**

Power and Tuned amplifiers

Power Amplifiers: Difference between voltage and power amplifier, Classification of power amplifiers and their comparisons. Circuit operation of complementary symmetry Class-B push pull power amplifier and derivation for overall efficiency. crossover distortion and heat sinks.

Tuned amplifiers: Single tuned and double tuned amplifiers circuit diagram, working and frequency response for each, limitations of single tuned amplifier, brief note on use of tuned amplifiers in communication circuits.

Unit 3 **8 hours**

Differential Amplifier: Circuit diagram, types of configurations (mention only), Dual Input Balanced Output Differential Amplifier– working, DC and AC analysis, tail current, expressions for Q point, differential gain, common mode gain, CMRR, input impedance and output impedances.

Current Mirror: Circuit diagram and working, differential amplifier with current mirror– circuit diagram and working (explanation of increase in CMRR).

Unit 4 **10 hours**

Feedback Amplifier and Oscillator

Feedback Amplifier: Principle of feedback amplifier, types of feedback, advantages and disadvantages of positive & negative feedback, types of negative feedback configurations- voltage series, voltage shunt, current series and current shunt (block diagram representation for each).

Voltage Series Negative Feedback: Effect of negative feedback on voltage gain-derivation, effect of negative feedback (no derivations) on Stability, Zi, Zo, Bandwidth, Noise & distortion, Numerical problems.

Sinusoidal Oscillators: Principle of oscillator (barkhausen criterion), damped and undamped oscillations, classification of oscillators (LC, RC and crystal oscillators). Study of Collpitt &

Hartley oscillators using transistors (no derivation)and numerical problems. Equivalent circuit of a piezo electric crystal and working of Collpitt crystal oscillator.

Multivibrators–types, block diagrams of astable, monostable & bistable multivibrators with waveforms. Circuit diagram and working of astable, monostable and bistable multivibrator using transistors (no derivation) and their comparisons.

Unit 5 **14 hours**

Special Purpose Devices

Types of MOSFETs and their circuit symbols, N-channel enhancement type MOSFET- Working and characteristic curves (without experimental circuit)

UJT: Basic construction and working, Equivalent circuit, intrinsic Standoff Ratio, Characteristics and relaxation oscillator-expression, Numerical problems.

SCR: Construction, Working and Characteristics, full wave controlled rectifier-derivations for average values of load current and voltage, numerical problems.

Triac and Diac – circuit symbol, basic constructional features, operation and applications (mention only).

LED– circuit symbol, operation and applications (mention only) and 7 segment display- common cathode and common anode (mention only), pin/segment identification- display of decimal digits.

LCD – types, applications (mention only), comparison with 7 segment display.

Tunnel diode, varactor diode, photo diode, photo Transistor & solar cell – circuit symbol, characteristics and applications (mention only).

Text books:

1. A Text book of Electronics, R.S.Sedha, S Chand and Co., Multicolour,3rd edition , 2012.
2. Electronic Principles , Albert Malvino& David J.Bates, TMH, 7th edition-2010
3. Electronic Devices and circuit theory, Robert Boylstead and Louis Nashelsky, 9th Edition, 2013, PHI

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3. Basic Electronics and Linear circuits, N.N. Bhargava, D.C. Kulshresta and D.C
4. Gupta-TMH.
5. Electronic devices, David A Bell, Reston Publishing Company/DB Tarapurwala Publ.
6. Principles of Electronics By V.K. Mehta, S.Chand& Co.
7. Electronic devices, applications and Integrated circuits, Mathur, Kulshreshta and Chadha, Umesh Publications.

Semester II - Practical II

EL-201P ELECTRONIC CIRCUITS AND SPECIAL PURPOSE DEVICES LAB

PART A –Demonstration experiment - not for Evaluation

1. Measurement of voltage, time period and frequency using C.R.O.

PART B –Performance experiments

1. CE Amplifier – frequency response
2. CC amplifier – voltage gain at one frequency, input and output impedances.
3. Tuned amplifier – frequency response
4. FET characteristics.
5. MOSFET characteristics
6. Common source FET amplifier
7. Hartley / Colpitt's oscillator
8. UJT characteristics
9. UJT relaxation oscillator.
10. SCR characteristics.
11. Transistor series regulator.
12. Current mirror.
13. Differential amplifier – common mode & differential gain, CMRR.
14. Clipping and clamping circuits-unbiased shunt type positive & negative Clippers, unbiased positive & negative Clampers.

Note: Minimum of 8 experiments to be performed.

B.Sc. Electronics Syllabus
Semester III - Paper 3
EL-301T LINEAR INTEGRATED CIRCUITS AND C PROGRAMMING

Unit 1 **12 hours**

Integrated circuit and operational amplifier

Integrated circuit, Advantages and disadvantages of ICs, scale of integration- classification of ICs by structure and by function (mention only), IC terminology, fabrication of monolithic IC-steps involved in the fabrication of a NPN transistor (epitaxial planar diffusion process).

Operational Amplifiers- Block diagram, equivalent circuit, various parameters op-amp -input bias current, input offset voltage, output offset voltage, CMRR, slew rate, SVRR, Characteristics of ideal and practical op-amps. Mention 3 different op-amp ICs with their characteristics, limitations of op-amp in open loop mode.

Op - Amp with Negative Feedback: Inverting amplifier- derivations for Av, concept of virtual ground. Non- inverting amplifier-derivations for Av. Voltage follower-circuit and features, Summing amplifier/adder and subtractor-derivation for the output voltage. Averaging amplifier, scale changer, numerical problems.

Op-Amp Integrator and Differentiator- derivation for the output voltage, output waveforms for sine and square wave inputs, small signal half wave rectifier-circuit and working.

Unit 2 **12 hours**

Applications of Operational Amplifier

Open loop applications: comparator-circuit and characteristics, Schmitt trigger-circuit and waveforms, Schmitt trigger ICs (mention only)

First Order Active Filters- low pass, high pass, band pass, band reject and all pass filters.

Circuit diagrams, derivation for cutoff frequency and numerical problems for low pass and high pass filters only. **Instrumentation amplifier** – circuit and working.

Op - Amp based Oscillator circuit: circuit, working, expression for frequency of oscillation of Phase-shift & Wein bridge oscillator (no derivation) and numerical problems.

D-A Conversion (DAC): Types of DAC, circuit and working of 4 bit binary weighted resistor type DAC.

A-D Conversion (ADC): Characteristics, Types of ADC (mention only) and their comparison, circuit diagram and working of successive approximation ADC

Unit 3 **08 hours**

PCB Design and Fabrication

Introduction to PCB: Definition and need of PCB, background and history of PCB, types of PCB, classes of PCB design, terminology in PCB, Different Electronic Design automation (EDA) tools and comparison.

PCB design process: PCB design flow, placement and routing steps involved in layout design, Art work generation methods-manual and CAD, General design factor for digital and analog circuits, Layout and Artwork making for single-side double-side and multilayer boards, Design for manufacturability, Design – Specification standards.

Introduction to PCB fabrication & Assembly: Steps involved in fabrication of PCB, PCB fabrication techniques-single, double sided and multilayer. Etching-chemical principles and mechanisms. Post operations- stripping, black oxide coating and solder masking. PCB component assembly process.

Unit 4 **20 hours**

C Programming

Introduction, Importance of C, Character set, Tokens, keywords, identifier, constants, basic data types, variables: declaration & assigning values. Structure of C program

Arithmetic operators, relational operators, logical operators, assignment operators, increment and decrement operators, conditional operators, bit wise operators, expressions and evaluation of expressions, type cast operator, implicit conversions, precedence of operators. Arrays-concepts, declaration, accessing elements, storing elements, two-dimensional and multi-dimensional arrays. Input output statement–sprintf(), scanf() & getch()) and library functions (math and string related functions).

Decision making, branching and looping: if, if-else, else-if, switch statement, break, for loop, while loop and do loop. Functions: Defining functions, function arguments and passing, returning values from functions, example programs.

Pointers and Structures

Pointers, Defining and declaring a structure variables, accessing structure members, initializing a structure, example programs

Text books:

1. A Text book of Electronics, R.S.Sedha, S Chand and Co., Multicolour,3rd edition , 2012.
2. Operational Amplifier and Linear Integrated circuits - Ramakanth Gayekwad
PHI 5th edition.
3. Electronic Devices and circuit theory, Robert Boylstead and Louis Nashelsky, 9th Edition, 2013, PHI.
4. Programming in ANSI C, Balagurusamy, 2nd edition, TMH.

Reference books:

1. Liner Integrated circuits by Roy Choudhury, New age international, 4th edition,2010
2. Basic electronics- B.L. Theraja - S. Chand and Co. 3rd edition -2012.
3. Electronics text lab manual, Paul B. Zbar.
4. Electronic devices, David A Bell, Reston Publishing Company/DB Tarapurwala Publ.
5. Electronic devices, applications and Integrated circuits, Mathur, Kulshreshta and Chadha, Umesh Publications.
6. Computer concepts and C Programming techniques by Padma Reddy, Nandi publications, 4th edition, 2010.

Semester III - Practical III
EL-301P LINEAR INTEGRATED CIRCUITS AND 'C' PROGRAMMING LAB

PART- A
Experiments on Linear Integrated Circuits

1. Inverting and non inverting amplifiers.
2. Adder and Subtractor.
3. Study of first order low-pass filter and high-pass filter.
4. RC phase shift oscillator/ Wein bridge oscillator Using op-amp.
5. Small signal half wave rectifier using OP-AMP.
6. Astable multivibrator / Monostable multivibrator using IC555.
7. Fixed voltage IC regulators using 78 series and 79 series.
8. Variable voltage regulator using IC LM 317.
9. Op-amp as Integrator /differentiator.
10. Design PCB of regulator circuit using 7805.
11. Design PCB of Astable/monostable multivibrator using IC 555.
12. Design PCB of RC phase shift/ wein bridge oscillator using transistor.

Note: Minimum of 5 experiments to be performed in PART- A.

One PCB experiment is compulsory: Design and Etching of PCB for the circuit with minimum of 10 component and Demonstration of its working. Same should be demonstrated at the time of practical examination as part Viva-Voce.

PART- B
Experiments on C Programming

1. To generate the Fibonacci series up to the given limit N and also print the number of elements in the series.
2. To find minimum and maximum of N numbers.
3. Find the GCD of two integer numbers.
4. Write a program to calculate factorial of a given number.
5. Find all the roots of a quadratic equation $Ax^2 + Bx + C = 0$ for non-zero coefficients A, B and C. Else report error.
6. Calculate the value of sin (x) and cos (x) using the series. Also print sin (x) and cos (x) value using library function.
7. To generate and print prime numbers up to an integer N.
8. To sort given N numbers in ascending order.
9. To find the sum & difference of two matrices of order MxN and PxQ.
10. To find the product of two matrices of order MxN and PxQ.
11. To find the transpose of given MxN matrix.
12. To find the sum of principle and secondary diagonal elements of the given M×N matrix.
13. Write a program to calculate the subject wise and student wise totals and store them as a part of the structure.

Note: Minimum of 5 experiments to be performed in PART- B

B.Sc. Electronics Syllabus
Semester IV – Paper 4
EL-401T DIGITAL ELECTRONICS AND VERILOG

Unit 1 **10 hours**

Boolean algebra and Logic Families

Boolean algebra: Constants, variables, operators and basic logic gates-AND, OR, NOT, logic symbol, truth table. Positive and negative logic, Boolean laws, Duality Theorem, De Morgan's Theorem, simplification of Boolean expressions-SOP and POS. Derived logic gates (NAND, NOR, XOR & XNOR). Universal property of NOR and NAND gates. Minterm, Maxterm, SSOP and SPOS. K-Map: 3 and 4 variable. Expressions simplifications.

Logic Families: Pulse characteristics, Logic Families-classification of digital ICs. Characteristics of logic families, circuit description of TTL NAND gate with totem pole and open collector. TTL IC terminology. Circuit description of CMOS inverter, comparison of TTL and CMOS families.

Unit 2 **10 hours**

Combinational Logic Circuits: Half Adder, Full Adder, Half Subtractor, Full Subtractor. Two bit comparator. Encoder, decimal to BCD priority encoder. Decoder, 2:4 decoder using AND gates, 3:8 decoder using NAND gates, BCD to decimal decoder, BCD to 7-Segment decoder, Multiplexer, 4:1 multiplexer, 8:1 multiplexer, Demultiplexer, 1:4 demultiplexer using gates. Realization of Full adder and Full subtractor using Mux and Decoder. Code Converters: Binary to Gray Code and vice versa, BCD to Excess-3code conversion using K-Map

Unit 3 **12 hours**

Sequential Logic Circuits

Flip-Flops: RS latch, Flip-Flops, clocked RS Flip Flop, edge triggering and level triggering, D Flip Flop and edge triggered J-K Flip Flop, T Flip Flop, edge triggered Master Slave JK Flip Flop, clear & preset inputs.

Registers and Counters: Types of Shift Registers, 4bit serial in serial out, serial in Parallel out, parallel in serial out, parallel in parallel out, applications. Ring counter, Johnson counter applications. **Asynchronous Counters**: Logic diagram, Truth table and timing diagrams of 3 bit ripple counter, 3 bit Up-Down counter and modulo counters. **Synchronous Counter**- Mod 3, Mod 5 and Decade Counters design using K-maps.

Programmable Logic Devices: Basic concepts, Types of PLDs (mention only) – SPLDs-ROM, PLA, PAL and GAL. CPLD and FPGA.

UNIT 4 **10 Hours**

Introduction to Verilog

A Brief History of HDL, Structure of HDL Module, Comparison of Verilog and VHDL. Introduction to Simulation and Synthesis Tools, Test Benches.

Verilog: Module, Delays, brief description - data flow style, behavioral style, structural style, mixed design style, simulating design.

Language Elements: Introduction, Keywords, Identifiers, White Space Characters, Comments, format, Logic Values.

Data Types: net types, undeclared nets, scalars and vector nets, Register type, Integers, Reals and strings. Parameters.

Expressions: Operands, Operators, Types of Expressions
Gate Level Modeling: Introduction, Built in Primitive Gates, Multiple input gates, Tri-state gates, pull gates, MOS switches, bidirectional switches, gate delay, array instances, implicit nets, Illustrative Examples (both combinational and sequential logic circuits).

UNIT 5 **10 hours**

Data Flow Modeling and Behavioral Modeling

Data Flow Modeling: Continuous assignment, net declaration assignments, delays, net delays and examples.

Behavioral Modeling: Procedural constructs, timing controls, block statement, procedural assignments, conditional statement, loop statement, procedural continuous assignment, Illustrative Examples

Text books:

1. Digital Fundamentals : Floyd , CBS Publishers
2. Modern Digital Electronics: R.P. Jain, 3rd edition, TMH Publications.
3. A Verilog HDL Primer – J. Bhasker, BSP, 2003 II Edition.
4. Verilog HDL-A guide to digital design and synthesis-SAMIR PALNITKAR, Pearson, 2nd edition. 5. Design through Verilog HDL – T.R. Padmanabhan and B. Bala Tripura Sundari, WSE, 2004 IEEE Press.

Reference books:

1. Digital Principles and applications: Malvino and Leach-TMH 3rd edition.
2. Digital Systems : Ronald J Tocci, PHI.
3. Design with TTL ICs, Robert L Morries, TMH. 3. Verilog and VHDL by BOTROS.
4. Digital Logic and Compuer design: M. Morris Mano- PHI, new edition
5. Digital Design: M. Morris Mano- PHI 2nd edition, 2000.
6. Digital computer Electronics: Malvino-TMH
7. Digital computer Fundamentals: Thomas C. Bartee-TMH
8. Experiments in digital principles: Malvino and Leach-TMH

Semester IV - Practical IV
EL-401P DIGITAL ELECTRONICS AND VERILOG LAB
Part-A

Experiments in Digital Electronics

1. Characteristics of logic gates 7400, 7402, 7404, 7406,7432
2. Study of logic gates using ICs (7404,7408, 7432,7402,7400,7486,7410) and study of universal property of NAND and NOR gates.
3. Half adder and Full adder using gates.
4. Half subtractor and full subtractor using gates.
5. Clocked RS and D FF using IC 7400 and JK FF using IC 7476.
6. D-A converter-Binary weighted resistor.
7. Shift registers-SISO and SIPO.
8. 4 bit ripple counter using IC 7476 and conversion to decade counter.
9. Decimal to BCD encoder, BCD to 7 segment decoder-7447.
10. Comparator-Study of 4 bit magnitude comparator.
11. Decoder (2:4) using AND gates & (3:8) using 74138
12. Realization of Full adder and Full subtractor using Mux and Decoder.
13. Study of Multiplexer using IC 74150 and De-Multiplexer using IC 74154.
14. Design and Realization of 4 bit Adder/Subtractor using IC 7483.
15. Design and Realization of BCD Adder using IC 7483.

Note: Minimum of 6 experiments to be performed in part A

Part-B

Experiments in Verilog

1. Write code to realize basic and derived logic gates.
2. Half adder, Full Adder using basic and derived gates.
3. Half subtractor and Full Subtractor using basic and derived gates.
4. Clocked D FF, T FF and JK FF (with Reset inputs).
5. Multiplexer (4x1, 8x1) and Demultiplexer using logic gates.
6. Decoder (2x4, 3x8), Encoders and Priority Encoders.
7. Design and simulation of a 4 bit Adder.
8. Code converters (Binary to Gray and vice versa).
9. 2 bit Magnitude comparator.
10. 3 bit Ripple counter.

Note: Minimum of 8 experiments to be performed in part B

BENGALURU CENTRAL UNIVERSITY
B. Sc. CBCS (Semester) SCHEME
Subject: ELECTRONICS

QUESTION PAPER PATTERN

Theory Question paper

Maximum marks: 70 **Duration: 3 hours**

Instructions: Answer all the questions from Part–A, any FIVE questions from Part–B and any FOUR questions from Part–C.

All the answers for Part –A should be written in any one page and to be answered once. Multiple answers are not allowed.

PART – A

Multiple choice questions (based on knowledge, skill, application and thought provoking):

15 out of 15 questions to be answered. 15×1 = 15

PART – B

Essay type questions:

Any FIVE questions to be answered out of EIGHT. 5 × 7 = 35

PART – C

Questions based on: Numerical problems /block diagrams/schematic diagrams/circuit diagrams/logic diagrams/truth tables/timing diagrams wherever applicable.

Any FOUR questions to be answered out of SIX . 4 × 5= 20

Theory internal assessment **Maximum marks: 30**

Attendance	10 marks
Internal tests	10 marks
Assignment/seminar/report on industrial visits /field visits/study tour...	10 marks

Dr. A.T. Devaraja
Professor & Chairman,
Dept. of Electronic Science,
Bangalore University,
Bengaluru - 560056

Marks weightage for CBCS Question paper in B.Sc. (70 marks)

I Semester-ELECTRONICS

EL-101T BASIC ELECTRONICS

As per the Syllabus, total number of teaching Hours: 52

Question paper pattern:

Part A (M.C.Q) : 15 Questions to be answered out of 15. 15×1 =15 marks
Part B (descriptive) : 5 to be answered out of 8 Questions. 08×7 =56 marks
Part C (numerical or/ other type): 4 to be answered out of 6. 06×5 =30 marks
Total : 101 marks

∴ Question paper to be set for ..... : 101 marks including choice.
Student is required to answer for ..... : 70 marks out of 101 marks.
Marks weightage = 101 marks/52 hours ≅ 1.94 marks / hour.

Unit wise marks weightage

Unit 1: 10 hours =10 × 1.94 ≅ 19 or 20marks.
Unit 2: 08 hours =8 × 1.94 ≅ 15 or 16 marks.
Unit 3: 12 hours =12 × 1.94 ≅ 23 or 24 marks.
Unit 4: 14 hours =14 × 1.94 ≅ 27 or 28 marks.
Unit 5: 08 hours =08 × 1.94 ≅ 15 or 16 marks.
Total: 101 marks.

Blue print 1:

Unit no. and title	Marks weightage to be assigned	Part A (1 mark)	Part B (7 marks)	Part C (5 marks)	Total marks
1(10 hrs) – Basic circuits	19 or 20	0	2	1	19
2(08hrs) –Network theorems	15 or 16	4	1	1	16
3(12 hrs) - SC diode & app	23or 24	4	2	1	23
4(14 hrs) - Transistor	27 or 28	4	2	2	28
5(08hrs) - Number systems	15 or 16	3	1	1	15
		15	56	30	101

Blue print 2:

Unit no. and title	Marks weightage to be assigned	Part A (1 mark)	Part B (7 marks)	Part C (5 marks)	Total marks
1(10 hrs) - Basic circuits	19 or 20	1	2	1	20
2(08hrs) - Network theorems	15 or 16	3	1	1	15
3(12 hrs) - SC diode & app	23or 24	5	2	1	24
4(14 hrs) - Transistor	27 or 28	3	2	2	27
5(08hrs) - Number systems	15 or 16	3	1	1	15
		15	56	30	101

Marks weightage for CBCS Question paper in B.Sc. (70 marks)

II Semester-ELECTRONICS

EL-201T ELECTRONIC CIRCUITS AND SPECIAL PURPOSE DEVICES

As per the Syllabus, total number of teaching Hours: 52

Question paper pattern:

Part A (M.C.Q) : 15 Questions to be answered out of 15. 15×1 =15 marks
Part B (descriptive) : 5 to be answered out of 8 Questions. 08×7 =56 marks
Part C (numerical or/ other type): 4 to be answered out of 6. 06×5 =30 marks
Total : 101 marks

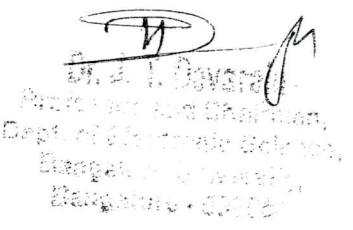
∴ Question paper to be set for ..... : 101 marks including choice.
Student is required to answer for ..... : 70 marks out of 101 marks.
Marks weightage = 101 marks/52 hours ≅ 1.94 marks / hour.

Unit wise marks weightage

Unit 1: 12 hours =12 × 1.94 ≅ 23 or 24marks.
Unit 2: 08 hours =8 × 1.94 ≅ 15 or 16 marks.
Unit 3: 08 hours =8 × 1.94 ≅ 15 or 16 marks.
Unit 4: 10 hours =10 × 1.94 ≅ 19 or 20 marks.
Unit 5: 14 hours =14 × 1.94 ≅ 27 or 28 marks.
Total: 101 marks.

Blue print 1:

Unit no. and title	Marks weightage to be assigned	Part A (1 mark)	Part B (7 marks)	Part C (5 marks)	Total marks
1(12 hrs) –Small signal amplifier	23 or 24	4	2	1	23
2(08hrs) –Power and tuned amplifier	15 or 16	4	1	1	16
3(08hrs)– Differential amplifier	15or 16	3	1	1	15
4(10 hrs) - Feedback amplifier and oscillator	19 or 20	1	2	1	20
5(14hrs) – Special purpose devices	27 or 28	3	2	2	27
		15	56	30	101



Blue print 2:

Unit no. and title	Marks weightage to be assigned	Part A (1 mark)	Part B (7 marks)	Part C (5 marks)	Total marks
1(12 hrs) –Small signal amplifier	23 or 24	5	2	1	24
2(08hrs) –Power and tuned amplifier	15 or 16	1	2	0	15
3(08hrs)– Differential amplifier	15 or 16	4	1	1	16
4(10 hrs) - Feedback amplifier and oscillator	19 or 20	2	1	2	19
5(14hrs) – Special purpose devices	27 or 28	3	2	2	27
		15	56	30	101

Marks weightage for CBCS Question paper in B.Sc. (70 marks)

III Semester-ELECTRONICS

EL-301T LINEAR INTEGRATED CIRCUITS AND C PROGRAMMING

As per the Syllabus, total number of teaching Hours: 52

Question paper pattern:

Part A (M.C.Q) : 15 Questions to be answered out of 15. 15×1 =15 marks
Part B (descriptive) : 5 to be answered out of 8 Questions. 08×7 =56 marks
Part C (numerical or/ other type): 4 to be answered out of 6. 06×5 =30 marks
Total : 101 marks

∴ Question paper to be set for .....: 101 marks including choice.
Student is required to answer for .....: 70 marks out of 101 marks.
Marks weightage = 101 marks/52 hours ≅ 1.94 marks / hour.

Unit wise marks weightage

Unit 1: 12 hours =12 × 1.94 ≅ 23 or 24marks.
Unit 2: 12 hours =12 × 1.94 ≅ 23 or 24 marks.
Unit 3: 08 hours =8 × 1.94 ≅ 15 or 16 marks.
Unit 4: 20 hours =20 × 1.94 ≅ 38 or 39 marks.

Total: 101 marks.

Blue print 1:

Unit no. and title	Marks weightage to be assigned	Part A (1 mark)	Part B (7 marks)	Part C (5 marks)	Total marks
1(12 hrs) –IC and op-amp	23 or 24	5	2	1	24
2(12hrs) –Applications of op-amp	23 or 24	0	2	2	24
3(08hrs)– PCB design & fabrication	15or 16	3	1	1	15
4(20 hrs) - C programming	38 or 39	7	3	2	38
		15	56	30	101

Marks weightage for CBCS Question paper in B.Sc. (70 marks)

IV Semester-ELECTRONICS

EL-401T DIGITAL ELECTRONICS AND VERILOG

As per the Syllabus, total number of teaching Hours: 52

Question paper pattern:

Part A (M.C.Q) : 15 Questions to be answered out of 15. 15×1 =15 marks
Part B (descriptive) : 5 to be answered out of 8 Questions. 08×7 =56 marks
Part C (numerical or/ other type): 4 to be answered out of 6. 06×5 =30 marks
Total : 101 marks

∴ Question paper to be set for ..... : 101 marks including choice.
Student is required to answer for ..... : 70 marks out of 101 marks.
Marks weightage = 101 marks/52 hours ≅ 1.94 marks / hour.

Unit wise marks weightage

Unit 1: 10 hours =10 × 1.94 ≅ 19 or 20marks.
Unit 2: 10 hours =10 × 1.94 ≅ 19 or 20 marks.
Unit 3: 12 hours =12 × 1.94 ≅ 23 or 24 marks.
Unit 4: 10 hours =10 × 1.94 ≅ 19 or 20 marks.
Unit 5: 10 hours = 10 X 1.94 ≅ 19 or 20 marks
Total: 101 marks.

Blue print 1:

Unit no. and title	Marks weightage to be assigned	Part A (1 mark)	Part B (7 marks)	Part C (5 marks)	Total marks
1(10 hrs) –Booiean Algebra and logic families	19 or 20	2	1	2	19
2(10hrs) –Combinational logic circuits	19 or 20	1	2	1	20
3(12hrs)– Sequential logic circuits	23or 24	5	2	1	24
4(10 hrs) - Introduction to Verilog	19 or 20	0	2	1	19
5(10 hrs)- Data flow modeling and behavioral modeling	19 or 20	7	1	1	19
		15	56	30	101

Scheme of Evaluation for B. Sc. I & II Semester (CBCS)
Electronics Practical Examination
Maximum marks: 35 Duration: 3 hours

Scheme of Evaluation:

Maximum marks for practical Examination..... 35 marks

a) Write up
(principle, circuit diagram, formulae, tabular columns and typical graph) 10 marks

b) Setting/circuit connections, performance & tabulation..... 10 marks

c) Calculation, graph& results ..... 05 marks

d) Viva related to the experiment ..... 05 marks

e) Practical record (for minimum of 8 experiments performed)..... 05 marks.

Scheme of Evaluation for B. Sc. III & IV Semester (CBCS)

Note: Each student has to perform any ONE experiment either from Part-A or from Part-B during Practical examination. However, in every batch of students assigned for practical examination,equal weightage must be given to both the sections of experiments (i.e., Part-A and Part-B).

Maximum marks for practical examination..... 35 marks

PART-A

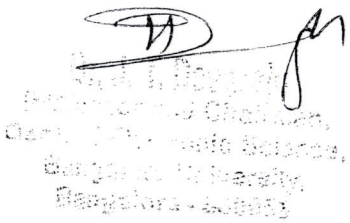
a) Practical record (for minimum of 10 experiments performed. i.e.,
for minimum of 5 experiments performed in part A and part B each..... 05 marks.

b) Write up (principle, circuit diagram, formulae and typical graph..... 10 marks
c) Setting/circuit connections, performance & tabulation..... 10 marks
d) Calculation, graph & results ..... 05 marks
e) Viva related to the experiment..... 05 marks

Or

PART-B

b) Program write up ..... 15 marks
c) Execution and result ..... 10 marks
d) Viva related to the experiment..... 05 marks
Total ..... 30 marks



BENGALURU CITY UNIVERSITY

SYLLABUS For B.Sc. MATHEMATICS
(I to IV Semester)

CHOICE BASED CREDIT SYSTEM

2020-2021

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BENGALURU
CENTRAL UNIVERSITY
ಆಗು ನೀ ಅನಿಕೇತನ
BE BOUNDLESS

Department of Mathematics
Central College Campus, Dr. Ambedkar Veedhi,
Bengaluru – 560 001.

Phone : 0091+-80-22961440 (O)
Email : medha@bub.ernet

Dr. Medha Itagi Huilgol M. Sc, Ph. D
Co-ordinator

Date: 10-08-2020

Proceedings of the BOS(UG) meeting

The BOS(UG) meeting in Mathematics was held on 10-08-2020 at 12 noon in the Department of Mathematics, Bengaluru Central University, Central College Campus, Bengaluru-560001.

The following members attended the meeting.

Sl. No	Name	Designation	Signature
1.	Dr. Medha Itagi Huilgol	Chairperson	
2.	Dr. D Sujatha	Member	10.8.20
3.	Prof. S. N Honnappa	Member	
4.	Dr.D.Radhakrishna	Member	
5.	Dr.M.S.Nagashree	Member	
6.	Prof.K.Shivakumar	Member	
7.	Mr.John J Binze	Member	
8.	Dr. Shivasharanappa Sigarkanti	Member	
9.	Smt. Saly Abraham	Member	Consented via email
10.	Sri. Chandrashekhar S. K	Member	

- Final drafted of the syllabus was checked.
- A discussion was held on the new syllabus.
- The syllabus was approved by the Chairperson and members present.
- The committee decided to get approval for **first four** semesters only.
- 5th and 6th semester syllabus will be decided in the next coming meetings.

(Medha Itagi Huilgol)
CO-ORDINATOR
Department of Mathematics
Bengaluru Central University
Central College Campus
Bengaluru - 560 001

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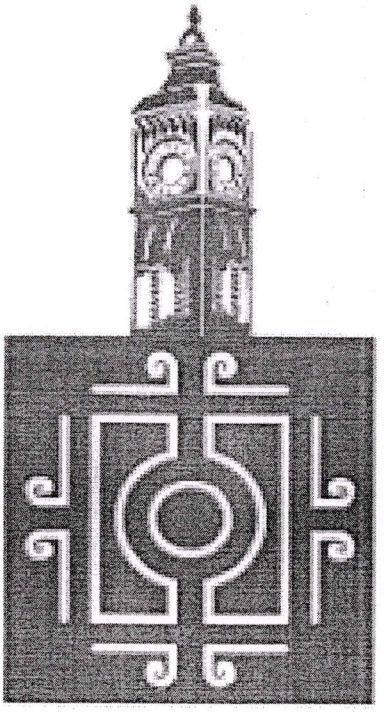

BENGALURU
CENTRAL UNIVERSITY

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BE BOUNDLESS

1 Medha Itagi Hulgol 10/08/20.

2. Dr. Sujatha. D 10.08.2020

3. S. N. Honnappa 10.08.2020

4. Dr. D. Radhakrishna 10/8/2020

5. Dr M.S.NAGASHREE 10/8/2020

6. Major K. SHIVAKUMAR 10/8/20

7. John J. Binze 10/8/20

8. Dr. Shivasharanappa S Igarkanti

9 Smt. Saly Abraham – Consent sent by mail

MISSION AND VISION OF THE NEW SYLLABUS IN MATHEMATICS

Mission

- Improve retention of mathematical concepts in the student.
- To develop a spirit of inquiry in the student.
- To improve the perspective of students on mathematics as per modern requirement.
- To initiate students to enjoy mathematics, pose and solve meaningful problems, to use abstraction to perceive relationships and structure and to understand the basic structure of mathematics.
- To enable the teacher to demonstrate, explain and reinforce abstract mathematical ideas by using concrete objects, models, charts, graphs, pictures, posters with the help of FOSS tools on a computer.
- To make the learning process student-friendly by having a shift in focus in mathematical teaching, especially in the mathematical learning environment.
- Exploit techno-savvy nature in the student to overcome math-phobia.
- Propagate FOSS (Free and open source software) tools amongst students and teachers as per vision document of National Mission for Education.
- To set up a mathematics laboratory in every college in order to help students in the exploration of mathematical concepts through activities and experimentation.
- To orient students towards relating Mathematics to applications.

Vision

- To remedy Math phobia through authentic learning based on hands-on experience with computers.
- To foster experimental, problem-oriented and discovery learning of mathematics.
- To show that ICT can be a panacea for quality and efficient education when properly integratedand accepted.
- To prove that the activity-centered mathematics laboratory places the student in a problem solving situation and then through self exploration and discovery habituates the student into providing a solution to the problem based on his or her experience, needs, and interests.
- To provide greater scope for individual participation in the process of learning and becoming autonomous learners.
- To provide scope for greater involvement of both the mind and the hand which facilitates cognition?
- To ultimately see that the learning of mathematics becomes more alive, vibrant, relevant and meaningful; a program that paves the way to seek and understand the world around them. A possible by-product of such an exercise is that math-phobia can be gradually reduced amongst students.
- To help the student build interest and confidence in learning the subject.

Support system for Students and Teachers in understanding and learning FOSS TOOLS:

As a national level initiative towards learning FOSS tools, IIT Bombay for MHRD, Government of India is giving free training to teachers interested in learning open source soft wares like scilab, maxima, python, octave, geogebraand others.

(website: http://spoken-tutorial.org ; email: contact@spoken-tutorial.org ; info@spokentutorial.org)

REVISED SYLLABUS

FIRST SEMESTER

MATHEMATICS – I

(4 lecture hours per week+3 hours of practical /week per batch of not more than 15 students)

(56 HOURS)

THEORY

1. ALGEBRA - I

Matrices

Elementary row and column transformations (operations), equivalent matrices, theorems on it. Row- reduced echelon form, Normal form of a matrix, Rank of a matrix, Problems.

Homogeneous and Non – Homogeneous systems of *m* linear equations in *n* unknowns consistency criterion – criterion for uniqueness of solutions.

Eigenvalues and Eigenvectors of a square matrix of order 2 and 3, standard properties, Matrix polynomial, Cayley-Hamilton theorem (with proof). Finding A^{-1},A^{-2} and A^2,A^3,A^4. Application Problems. **(14 lecture hours)**

2. CALCULUS – I

a) Differential Calculus

Successive Differentiation - n^{th} derivatives of the functions: e^{ax+b} , $(ax + b)^n$, $\log(ax + b)$, $\sin(ax + b)$, $\cos(ax + b)$, $e^{ax}\sin(bx+ c)$, $e^{ax}\cos(bx + c)$ – Problems. Leibnitz theorem (with proof) and its applications.

Partial differentiation –Function of two and three variables - First and higher order derivatives - Homogeneous functions – derivatives- Euler's theorem and its extension (with proof) - Total derivative and differential - Differentiation of implicit functions and composite functions – Problems - Jacobians – Properties of Jacobians problems.Application Problems

b) Integral Calculus

Reduction formulae for $\int \sin^n x\,dx$, $\int \cos^n x\,dx$, $\int \tan^n x\,dx$, $\int \cot^n x\,dx$, $\int \sec^n x\,dx$, $\int \operatorname{cosec}^n x\,dx$, $\int \sin^m x \cos^n x\,dx$, with definite limit - problems. Differentiation under integral sign by Leibnitz rule- problems. **(28 lecture hours)**

3. GEOMETRY

Analytical Geometry of Three Dimensions

Recapitulation of elements of three dimensional geometry- Equation of the sphere in general and standard forms - equation of a sphere with given ends of a diameter. Tangent plane to a sphere, orthogonality of spheres.

Standard equations of right circular cone and right circular cylinder and problems.

(14 lecture hours)

Note: All the derivations (book works) must be through vector methods with reduction to corresponding Cartesian equivalents.

Suggested distribution of lecture hours

1. Matrices: 1 hour perweek
2. Differential Calculus and Integral Calculus: 2 hours perweek
3. Analytic Geometry of three dimensions: 1 hour perweek.

Text Books

1. Shanti Narayan and P K Mittal, Text book of *Matrices*, 5th ed., New Delhi, S. Chand and Co.Pvt. Ltd.,2013.
2. Shanthi Narayan and P K Mittal, *Differential Calculus*, Reprint. New Delhi: S. Chand and Co. Pvt. Ltd., 2014.
3. Shanthi Narayan and P K Mittal, *Integral Calculus*, Reprint. New Delhi: S. Chand and Co. Pvt. Ltd., 2013.
4. Shanthi Narayan and P K Mittal, *Analytical Solid Geometry*. New Delhi: S. Chand and Co. Pvt. Ltd., 2014.
5. Philip N. Klein, *Coding the Matrix: Linear Algebra through Computer Science Applications*, Newtonian Press, 2013.
6. Brian Heinold,*A Practical Introduction to Python Programming*, Department of Mathematics and Computer Science, Mount St. Mary's University, 2019.

Reference Books

1. B S Vatssa, *Theory of Matrices*, New Delhi: New Age International Publishers, 2005.

2. A R Vashista,*Matrices,* Krishna PrakashanaMandir, 2003.
3. G B Thomasand and R L Finney, *Calculus and analytical geometry,*Addison Wesley, *1995.*
4. J Edwards, *An elementary treatise on the differential calculus: withapplications and numerous example*, Reprint. Charleston, USA: BiblioBazaar, 2010.
5. N P Bali, *Differential Calculus*, India: Laxmi Publications (P) Ltd.., 2010.
6. S Narayanan & T. K. Manicavachogam Pillay, *Calculus*.: S. Viswanathan Pvt. Ltd., Vol. I & II, 1996.
7. Frank Ayres and Elliott Mendelson, *Schaum's Outline of Calculus*, 5th ed. USA: Mc. Graw Hill., 2008.
8. SPMahajan & Ajay Aggarwal, *Comprehensive Solid Geometry*, 1st ed.: Anmol Publications , 2000.
9. H. Anton, I Birens and S. Davis, Calculus, John Wiley and Sons, Inc, 2002.

Useful web links:

1. http://www.cs.columbia.edu/~zeph/3203s04/lectures.html
2. http://home.scarlet.be/math/matr.htm
3. http://www.themathpage.com/
4. http://www.abstractmath.org/
5. http://ocw.mit.edu/courses/mathematics/
6. http://planetmath.org/encyclopedia/TopicsOnCalculus.html
7. http://ocw.mit.edu/OcwWeb/Mathematics/18-01Fall-2005/CourseHome/index.htm
8. http://mathworld.wolfram.com/Calculus.html
9. http://ocw.mit.edu/courses/mathematics/
10. http://www.univie.ac.at/future.media/moe/galerie.html
11. http://mathworld.wolfram.com/AnalyticGeometry.html
12. http://www.nptelvideos.in/2012/11/mathematics.html
13. https://www.my-mooc.com/en/categorie/mathematics
14. www.python.org
15. www.rosettacode.org
16. http://faculty.msmary.edu/heinold/python.html
17. https://kitchingroup.cheme.cmu.edu/pycse/pycse.html

PRACTICALS – I

Mathematics practicalwith Free *and* Open Source Software (FOSS) tool for computer programs(3 hours/ week per batch of not more than 15 students)

LIST OF PROBLEMS

1. Introduction to Python: Basic syntax, variable types, basic operators, numbers, strings, lists, tuples, functions and input/output statements.

2. Some simple programs to understand the relational, conditional and logical operators.
   i) Compare two numbers (less than, greater than) using *if* statement
   ii) Sum of natural numbers using *while* loop
   iii) Finding the factors of a number using *for* loop.
   iv) To check the given number is prime or not (use *if... else* statement).
   v) Find the factorial of a number (use *if...if...else*).
   vi) Simple programs to illustrate *logical operators (and, or, not)*

Note: Give the structure of a while...do loop to the students and illustrate with an example.

3. Python commands to reduce given matrix to echelon form and normal form with examples.
4. Python program/command to establish the consistency or otherwise and solving system of linear equations.
5. Python command to find the n^{th} derivatives.
6. Python program to find n^{th} derivative with and without Leibnitz rule.
7. Obtaining partial derivative of some standard functions
8. Verification of Euler's theorem, its extension and Jacobean.
9. Python program for reduction formula with or without limits.
10. Python program to findequation and plot sphere, cone, cylinder.

Note: The above list may be changed annually with the approval of the BOS in UG (Mathematics).

SECOND SEMESTER

MATHEMATICS – II

(4 lecture hours per week+ 3 hours of practicals /week per batch of not more than 15 students)

(56 HOURS)

THEORY

1. ALGEBRA - II

Group Theory

Binary operation, algebraic structure-problems on finding identity and inverse. Definitions of semigroup and group, abelian group – problems on finite and infinite groups. Properties of group with proof – standard problems on groups – A finite semi group with both the cancellation laws is a group – Any group of order less than five is abelian – permutation groups.

Subgroups- theorems on subgroups (with proof)- problems. **(14 lecture hours)**

2. CALCULUS - II

a) Differential Calculus

Polar coordinates - Angle between the radius vector and the tangent - Angle of intersection of curves (polar form) polar sub-tangent and polar subnormal- perpendicular from pole on the tangent - Pedal equations. Derivative of an arc in Cartesian, parametric and polar forms (with derivations).

Curvature of plane curves - formula for radius of curvature in Cartesian, parametric, polar and pedal forms - centre of curvature - evolutes. Singular points – Asymptotes – Envelopes. Application Problems

b) Integral Calculus

Applications of Integral Calculus: computation of length of arc, plane area and surface area and volume of solids of revolutions for standard curves in Cartesian and Polar forms. Application Problems. **(28 lecture hours)**

3. DIFFERENTIAL EQUATIONS – I

Recapitulation of Solutions of ordinary differential equations of first order and first degree.Solutions of:

(i) Linear equations, Bernoulli's equation.

(ii) Exact equations(excluding reducible to Exact)

Equations of first order and higher degree – nonlinear first order, higher degree – solvable for p - solvable for y - solvable for x - Clairaut's equation - singular solution - Geometric meaning. Orthogonal trajectories in Cartesian and polar forms. Application Problems.**(14 lecture hours)**

Suggested distribution of lecture hours

1. Algebra-II (Group theory) : 1 hour / week
2. Calculus-II (Differential calculus & Integral Calculus): 2 hours / week.
3. Differential Equations-I: 1 hour / week.

Text Books

1. Herstein I N, *Topics in Algebra*, 4th ed. New Delhi, India: Vikas Publishing House Pvt. Ltd, 1991.
2. Shanthi Narayan and P K Mittal, *Differential Calculus*, Reprint. New Delhi: SChand and Co. Pvt. Ltd., 2014.
3. Shanthi Narayan and P K Mittal, *Integral Calculus*, Reprint. New Delhi: S. Chand and Co. Pvt. Ltd., 2013.
4. M D Raisinghania, Ordinary and Partial Differential Equations, S Chand and Co. Pvt. Ltd., 2014.
5. Eric Ayars, *Computational Physics with Python*, California State University, Chico.
6. Hans PetterLangtangen and Anders Logg, *Solving PDEs in Python*, Springer, 2017.

Reference Books

1. Michael Artin, *Algebra*, 2nd ed. New Delhi, India: PHI Learning Pvt. Ltd., 2011.
2. Vashista, *A First Course in Modern Algebra*, 11th ed.: Krishna Prakasan Mandir, 1980.
3. John B Fraleigh, *A First course in Abstract Algebra*, 3rd ed.: Narosa Publishing House., 1990.
4. R Balakrishan and N.Ramabadran, *A Textbook of Modern Algebra*, 1st ed. New Delhi, India: Vikas publishing house pvt. Ltd., 1991.
5. G B Thomasand R L Finney, *Calculus and analytical geometry, Addison Wesley, 1995.*
6. J Edwards, *An elementary treatise on the differential calculus: with applications and numerous example*, Reprint. Charleston, USA: BiblioBazaar, 2010.
7. N P Bali, *Differential Calculus*, New ed. New Delhi, India: Laxmi Publications (P) Ltd.., 2010.

8. S Narayanan & T. K. Manicavachogam Pillay, *Calculus*.: S. Viswanathan Pvt. Ltd., vol. I & II, 1996.
9. Frank Ayres and Elliott Mendelson, *Schaum's Outline of Calculus*, 5th ed. USA: Mc. Graw Hill., 2008.
10. E Spiegel, *Schaum's Outline of AdvancedCalculus*, 5th ed. USA: Mc. Graw Hill., 2009.
11. M D Raisinghania, *Advanced Differential Equations*, S Chand and Co. Pvt. Ltd., 2013.
12. FAyres, *Schaum's outline of theory and problems of Differential Equations*, 1st ed. USA: McGraw-Hill, 2010.
13. S Narayanan and T K Manicavachogam Pillay, *Differential Equations*.: S V Publishers Pvt. Ltd., 1981.
14. G F Simmons, *Differential equation with Applications and historical notes*, 2nd ed.: McGraw-Hill Publishing Company, Oct 1991.
15. Hans PetterLangtangen, *A primer on Scientific programming with Python*, Springer, 2016.

Useful web links:

1. http://www.themathpage.com/
2. http://www.abstractmath.org/
3. http://ocw.mit.edu/courses/mathematics/
4. http://planetmath.org/encyclopedia/TopicsOnCalculus.html
5. http://ocw.mit.edu/OcwWeb/Mathematics/18-01Fall-2005/CourseHome/index.htm
6. http://mathworld.wolfram.com/Calculus.html
7. http://ocw.mit.edu/courses/mathematics/
8. http://www.univie.ac.at/future.media/moe/galerie.html
9. http://tutorial.math.lamar.edu/classes/de/de.aspx
10. http://www.sosmath.com/diffeq/diffeq.html
11. http://www.analyzemath.com/calculus/Differential_Equations/applications.html
12. http://www.nptelvideos.in/2012/11/mathematics.html
13. https://www.my-mooc.com/en/categorie/mathematics
14. www.python.org
15. www.rosettacode.org
16. http://faculty.msmary.edu/heinold/python.html
17. https://kitchingroup.cheme.cmu.edu/pycse/pycse.html

PRACTICALS –II

Mathematics practicals with *Free and Open Source Software* (FOSS) tool for computer programs(3 hours/ week per batch of not more than 15 students)

LIST OF PROGRAMMES

1. i). Verifying whether given operator is binary or not
   ii). To find identity and inverse element of a group
2. Plotting of standard Cartesian curves(Part-1)
3. Plotting of standard Cartesian curves (Part-2)
4. Plotting of standard polar curves
5. Plotting of standard parametric curves
6. Surface area and Volume of curves
7. Solution of differential equation and plotting(Part-1)
8. Solution of differential equation and plotting(Part-2)
9. Solution of differential equation and plotting(Part-3)
10. Solution of differential equation and plotting the solution(Part-4)

Note: The above list may be changed annually with the approval of the BOS in UG (Mathematics).

THIRD SEMESTER

MATHEMATICS-III

(4 lecture hours per week+ 3 hours of practicals /week per batch of not more than 15 students)

(56 HOURS)

THEORY

1. ALGEBRA - III

Groups

Order of an element of a group – properties related to order of an element- subgroup generated by an element of a group – Equivalence Class and partition of a set, coset decomposition of a group, Cyclic groups- properties- modulo relation- index of a group – Lagrange's theorem- consequences.

(14 lecture hours)

2. ANALYSIS – I

a) Sequences of Real Numbers

Definition of a sequences-Bounded sequences- limit of a sequences- convergent, divergent and oscillatory sequences- Monotonic sequences and their properties- Cauchy's criterion. Application Problems.

b) Series of Real Numbers

Definition of convergence, divergence and oscillation of series -properties of Convergence series - properties of series of positive terms – Geometric series Tests for convergence of series -p- series - comparison of series Cauchy's root Test -D Alembert's test. Raabe'stest ,- Absolute and conditional convergence-D' Alembert test for absolute convergence - Alternating series - Leibnitz test.

Summation of binomial, exponential and logarithmic series.Application Problems.

(28 lecture hours)

3. MATHEMATICAL METHODS -I

Definition and basic properties Laplace transform of some common functions and Standard results –Laplace transform of periodic functions- Laplace transforms ,of derivatives And the integral of function- Laplace transforms, Heaviside function convolution theorem (statement only) Inverse Laplace transforms. Application Problems. **(14 lecture hours)**

Suggested distribution of lecture hours

1. Algebra – III (Groups): 1 hour / week.
2. Analysis-I (sequences of real numbers and series of real numbers):2 hours /week
3. Mathematical Methods - I (1 hour / week.)

Text Books

1. Herstein I N, *Topics in Algebra*, 4th ed. New Delhi, India: Vikas Pub. House Pvt. Ltd, 1991.
2. Boumslag and Chandler, *Schaum's outline series on groups*, 2010.
3. S.C.Malik and Savita Arora, *Mathematical Analysis*, 2nd ed. New Delhi, India: New Age international (P) Ltd., 1992.
4. John Kerl, Concrete abstract algebra in Python, Notes.
5. Titus Adrian Beu, Introduction to Numerical programming, CRC Press, Taylor and Fransis.
6. Eric Ayars, *Computational Physics with Python*, California State University, Chico.

Reference Books

1. Michael Artin, *Algebra*, 2nd ed. New Delhi, India: PHI Learning Pvt. Ltd., 2011.
2. Vashista, *A First Course in Modern Algebra*, 11th ed.: Krishna Prakasan Mandir, 1980.
3. John B Fraleigh, *A First course in Abstract Algebra*, 3rd ed.: Narosa Publishing House., 1990.
4. R Balakrishan and N.Ramabadran, *A Textbook of Modern Algebra*, 1st ed. New Delhi, India: Vikas publishing house pvt. Ltd., 1991.
5. Richard R Goldberg, *Methods of Real Analysis*, Indian ed. New Delhi, India: Oxford and IBH Publishing Co., 1970.
6. Raisinghania M.D., *Laplace and Fourier Transforms*. New Delhi, India: S. Chand and Co. Ltd. , 1995.

Usefulweb links:

1. http://www.themathpage.com/
2. http://www.abstractmath.org/
3. http://ocw.mit.edu/courses/mathematics/
4. http://www.math.unl.edu/~webnotes/contents/chapters.htm

5. http://www-groups.mcs.st-andrews.ac.uk/~john/analysis/index.html
6. http://web01.shu.edu/projects/reals/index.html
7. http://www.mathcs.org/analysis/reals/index.html
8. http://planetmath.org/encyclopedia/TopicsOnCalculus.html
9. http://ocw.mit.edu/OcwWeb/Mathematics/18-01Fall-2005/CourseHome/index.htm
10. http://mathworld.wolfram.com/Calculus.html
11. http://ocw.mit.edu/courses/mathematics/
12. http://www.nptelvideos.in/2012/11/mathematics.html
13. https://www.my-mooc.com/en/categorie/mathematics
14. www.python.org
15. http://doc.sagemath.org/html/en/thematic_tutorials/group_theory.html
16. http://doc.sagemath.org/html/en/reference/groups/sage/groups/abelian_gps/abelian_group_morphism.html
17. https://kitchingroup.cheme.cmu.edu/pycse/pycse.html

PRACTICALS –III

Mathematics practicals with Free *and* Open Source *Software* (FOSS) tool for computer programs(3 hours/ week per batch of not more than 15 students)

LIST OF PROBLEMS

1. Examples for finding right and left coset and the index of a group.
2. Examples to verify Lagrange's theorem.
3. Illustration of convergent, divergent and oscillatory sequence.
4. Illustration of convergent, divergent and oscillatory series.
5. Using Cauchy's criterion to determine the convergence of a sequence.
6. To find the sum of the series.
7. Finding the Laplace transform.
8. Finding the inverse Laplace transform.
9. Laplace transform method of solving first order ordinary differential equations with constant coefficients.
10. Laplace transform method of solving second order ordinary differential equations with constant coefficients

Note: The above list may be changed annually with the approval of the BOS in UG (Mathematics).

FOURTH SEMESTER

MATHEMATICS – IV

(4 lecture hours per week+ 3 hours of practicals /week per batch of not more than 15 students)

(56 HOURS)

THEORY

1. ALGEBRA –IV

Groups

Normal subgroups-examples and problems –Quotient group-Homomorphism and Isomorphism of groups-Kernel and image of a homomorphism-Normality of the Kernel-Fundamental theorem of homomorphism- properties related to isomorphism-Permutation group-Cayley's theorem.**(10 lecture hours)**

2. ANALYSIS -II

Fourier Series

Trigonometric Fourier series of functions with period 2π and period 2L - Half range Cosine and sine series. Application problems. **(10 lecture hours)**

3. CALCULUS - III

Differential Calculus

Definition of the limit of a function in ε-δ form –continuity- types of discontinuities. Properties of continuous function on a closed interval (boundedness, attainment of bounds and taking every value between bounds). Differentiability - Theorem :Differentiability implies Continuity - Converse not true. Rolle's Theorem- Lagrange's and Cauchy's First Mean Value Theorem (Lagrange's form) - Maclaurin's expansion. Evaluation of limits by L' Hospital's rule

Continuity and differentiability of a function of two and three variables – Taylor's Theorem and expansion of functions of two variables- Maxima and Minima of functions of two variables. Method of Lagrange multipliers. **(22 lecture hours)**

4. DIFFERENTIAL EQUATIONS –II

Second and higher order ordinary linear differential equations with constant Coefficients- complementary function- particular integrals (standard types) Cauchy-Euler differential equation. Simultaneous linear differential equations (two variables) with constant coefficients. Solutions of second order ordinary linear differential equations with variables coefficients by the following methods.

(i) When a part of complementary function is given
(ii) Changing the independent variable
(iii) Changing the dependent variable
(iv) Variation of parameters
(v) Conditions for exactness and the solution when the equation is exact.

(14 lecture hours)

Suggested distribution of lecture hours

1. Algebra – IV, Analysis – II, Calculus - III: 3 hours / week.
2. Differential Equations II: 1 hour / week.

Text Books

1. Herstein I N, *Topics in Algebra*, 4th ed. New Delhi, India: Vikas Publishing House Pvt. Ltd, 1991.
2. Boumslag and Chandler, *Schaum's outline series on groups*, 2010.
3. Erwin Kreyszig, *Advanced Engineering Mathematics*, 8th ed. New Delhi, India: Wiley India Pvt. Ltd., 2010.
4. Shanthi Narayan and P K Mittal, *Differential Calculus*, Reprint. New Delhi: SChand and Co. Pvt. Ltd., 2014.
5. M D Raisinghania, *Ordinary and Partial Differential Equations*,S Chand and Co. Pvt. Ltd., 2014.
6. John Kerl, Concrete abstract algebra in Python, Notes.

Reference Books

1. Michael Artin, *Algebra*, 2nd ed. New Delhi, India: PHI Learning Pvt. Ltd., 2011.
2. Vashista, *A First Course in Modern Algebra*, 11th ed.: Krishna Prakasan Mandir, 1980.
3. John B Fraleigh, *A First course in Abstract Algebra*, 3rd ed.: Narosa Publishing House., 1990.
4. R Balakrishan and N.Ramabadran, *A Textbook of Modern Algebra*, 1st ed. New Delhi, India: Vikas publishing house pvt. Ltd., 1991.
5. G B Thomasand R L Finney, *Calculus and analytical geometry, Addison Wesley, 1995.*

6. J Edwards, *An elementary treatise on the differential calculus: with applications and numerous example*, Reprint. Charleston, USA: BiblioBazaar, 2010.
7. N P Bali, *Differential Calculus*, Laxmi Publications (P) Ltd., 2010.
8. S Narayanan & T. K. Manicavachogam Pillay, *Calculus*.: S. Viswanathan Pvt. Ltd., Vol. I & II, 1996.
9. Frank Ayres and Elliott Mendelson, *Schaum's Outline of Calculus*, 5th ed.USA: Mc. Graw Hill., 2008.
10. E Spiegel, *Schaum's Outline of Advanced Calculus*, 5th ed. USA: Mc. Graw Hill., 2009.
11. M D Raisinghania, *Advanced Differential Equations*,S Chand and Co. Pvt. Ltd., 2013.
12. FAyres, *Schaum's outline of theory and problems of Differential Equations*, 1st ed. USA: McGraw-Hill, 2010.
13. S Narayanan and T K Manicavachogam Pillay, *Differential Equations*.: S V Publishers Private Ltd., 1981.
14. G F Simmons, *Differential equation with Applications and historical notes*, 2nd ed.: McGraw-Hill Publishing Company, Oct 1991.
15. Shepley L. Ross, Differential Equations, 3rd Ed., John Wiley and Sons,1984.

Useful web links:

1. http://www.themathpage.com/
2. http://www.abstractmath.org/
3. http://www.fourier-series.com/
4. http://mathworld.wolfram.com/
5. http://www.princeton.edu/~rvdb
6. http://www.zweigmedia.com/RealWorld/Summary4.html
7. http://ocw.mit.edu/courses/mathematics/
8. http://planetmath.org/encyclopedia/TopicsOnCalculus.html
9. http://ocw.mit.edu/OcwWeb/Mathematics/18-01Fall-2005/CourseHome/index.htm
10. http://mathworld.wolfram.com/Calculus.html
11. http://ocw.mit.edu/courses/mathematics/
12. http://www.univie.ac.at/future.media/moe/galerie.html
13. http://tutorial.math.lamar.edu/classes/de/de.aspx
14. http://www.sosmath.com/diffeq/diffeq.html
15. http://www.analyzemath.com/calculus/Differential_Equations/applications.html
16. http://www.nptelvideos.in/2012/11/mathematics.html
17. https://www.my-mooc.com/en/categorie/mathematics

18. www.python.org
19. http://www.auraauro.com/uncategorized/demonstration-of-fourier-series-using-python-code/
20. https://kitchingroup.cheme.cmu.edu/pycse/pycse.html

PRACTICALS –IV

Mathematics practicals with *Free and Open Source Software* (FOSS) tool for computer programs(3 hours/ week per batch of not more than 15 students)

LIST OF PROBLEMS

1. Verification of normality of a given subgroup
2. Illustrating homomorphism and isomorphism of groups
3. To find full range trigonometric Fourier series of some simple functions with period 2π and 2L
4. Finding the half-range sine and cosine series of simple functions and plotting them.
5. Program to illustrate continuity of a function
6. Program to illustrate differentiability of a function
7. Program to verify Rolle's theorem
8. Program to verify and Lagrange's theorem
9. Evaluation of limits by L'Hospital's rule
10. Solution of second and higher order ordinary differential equations with constant coefficients
11. Solution of second order ordinary differential equations with variable coefficients

    i) Method of variation of parameters

    ii) When the equation is exact

Note: The above list may be changed annually with the approval of the BOS in UG (Mathematics).

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
1	B.Sc. I	Theory	4 hrs	3 hrs	30	70	100	150
		Practical	3 hrs	3 hrs	15	35	50	
2	B.Sc. II	Theory	4hrs	3 hrs	30	70	100	150
		Practical	3 hrs	3 hrs	15	35	50	
3	B.Sc.III	Theory	4 hrs	3 hrs	30	70	100	150
		Practical	3 hrs	3 hrs	15	35	50	
4	B.Sc. IV	Theory	4 hrs	3 hrs	30	70	100	150
		Practical	3 hrs	3 hrs	15	35	50	

Note: In thePractical component out of 35 marks: 25 for practical exam + 5 for vivo +5 for lab record.

PATTERN OF THE QUESTION PAPER

FROM 1st TO 4th 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 TWO of the following (03 questions are given)	2x 5 = 10 Marks
V	Answer any TWO of the following (03 questions are given)	2x 5 = 10 Marks
VI	Answer any TWO of the following (03 questions are given) Questions to be taken only from Application part	2x 5 = 10 Marks

BENGALURU CITY UNIVERSITY

SYLLABUS For B.Sc. PHYSICS
(I to VI Semester)

CHOICE BASED CREDIT SYSTEM

2020-2021

Department of Physics

Bengaluru Central University

Proceedings of the BOS meeting in Physics (UG) held during 17th to 25th July 2020 (Through circulation)

The syllabus (Physics) for Three year B.Sc., course (CBCS Scheme) prepared in the required pattern as suggested by the University along with the scheme and pattern of the question papers (To be implemented from the academic year 2020-2021) were sent to the members of Board of Studies for scrutiny, finalisation and its approval through circulation by mail (From 17th to 25th July 2020). The members have gone through the syllabus carefully and gave their suggestions and approval through the mail. The syllabus which was corrected for the suggestions was recommended for its submission to the University for its acceptance.

Prof N Nagaiah
Chairman, BOS in Physics (PG)
Bengaluru City University

Question Paper Pattern

I / II / III and IV Semester (Papers PHY101/PHY201/PHY301/PHY401)

Part A: Multiple Choice Questions 10 out of 10 x 1Mark = 10 Marks (One out of Four Choice should be correct.

Part B: Short Answer Questions: 5 out of 8 x 2Marks = 10Marks (2 questions from each unit compulsorily to be given)

Part C: Long Answer Questions: 5 out of 8 x 6 Marks = 30Marks (2 questions from each unit compulsorily to be given)

Part D: Numerical Problems: 4 out of 8 x 5 Marks = 20 Marks (2 Problems from each unit compulsorily to be given)

V and VI Semester Papers (PHY501/PHY503/PHY601/PHY603)

Part A: Multiple Choice Questions 10 out of 10 x 1Mark = 10 Marks (One out of Four Choice should be correct.

Part B: Short Answer Questions: 5 out of 8 x 2Marks = 10 Marks (2 questions from each unit compulsorily to be given)

Part C: Long Answer Questions: 5 out of 7 x 6 Marks = 30 Marks (Minimum of 2 questions from each unit compulsorily to be given, but not exceeding 3 questions)*

Part D: Numerical Problems: 4 out of 8 x 5 Marks = 20 Marks (2 Problems from each unit compulsorily to be given)

*Three problems from the unit in which two questions have been set in Part C have to be given in part D

BENGALURU CENTRAL UNIVERSITY

Scheme of Instruction & Examination for B.Sc., Physics, CBCS Scheme (from 2020 -21)

Sl. No.	Course Number	Teaching hours per week	Exam duration	Maximum marks		Maximum total marks	Credits
				Final exam	Internal Assessment		
01	PHY 101	4	3 hours	70	30	150	2
02	PHY 102	3	3 hours	35	15		1
03	PHY 201	4	3 hours	70	30	150	2
04	PHY 202	3	3 hours	35	15		1
05	PHY 301	4	3 hours	70	30	150	2
06	PHY 302	3	3 hours	35	15		1
07	PHY 401	4	3 hours	70	30	150	2
08	PHY 402	3	3 hours	35	15		1
09	PHY 501	3	3 hours	70	30	150	2
10	PHY 502	3	3 hours	35	15		1
11	PHY 503	3	3 hours	70	30	150	2
12	PHY 504	3	3 hours	35	15		1
13	PHY 601	3	3 hours	70	30	150	2
14	PHY 602	3	3 hours	35	15		1
15	PHY 603	3	3 hours	70	30	150	2
16	PHY 604	3	3 hours	35	15		1
					Grand Total	1200	24

Note-I:

- The course number is a three digit number with ' **0** ' in the middle
- The digit to the left of ' **0** ' indicates the semester number
- Odd number to the right of ' **0** ' indicates a theory paper
- Even number to the right of ' **0** ' indicates a practical paper

Note-II:

The marks distribution for the final practical examination is as follows:

- Formula/Formulae with explanation of symbols - 03 marks
- Diagram/Circuit diagram and tabular column - 03 marks
- Experimental setup + systematic entry of readings - 08 marks
- Accuracy of readings - 05 marks
- Graphs and Calculations - 04 marks
- Final result and units - 02 marks
- Practical record book valued by the examiner - 05 marks
- Viva voce - 05 marks

Total for the practical examination – 35 marks

Note-III:

A minimum of **EIGHT** (8) experiments must be performed in each practical paper.

BENGALURU CENTRAL UNIVERSITY
Syllabus for I Semester B. Sc. (Physics)
PHY101: Mechanics and Properties of Matter

Unit -1

Newton's laws and their applications

Statement and explanation of the Newton's laws of motion, Inertial frames of reference, Galilean transformations, Atwood machine, Static and dynamic friction, Motion along inclined plane with and without frictional force, Use of free body diagrams, motion in a resistive medium, terminal velocity.

(8 hours)

Non-inertial frames of reference, Rotating coordinate system, Pseudo forces, Centrifugal and Coriolis forces, effects of Centrifugal and Coriolis forces at earth's surface, the Foucault pendulum (qualitative)

(5 hours)

Unit -2

Work, energy and conservation laws

Work done by a constant and a variable force, power, kinetic energy, conservative and non-conservative forces, potential energy, law of energy conservation, momentum, impulse, collisions, elastic and inelastic collisions, conservation of momentum, ballistic pendulum, rocket motion. (8 hours)

Motion due to gravitation

Newton's law of gravitation, inertial and gravitational mass, gravitational potential energy, weight of a body, Satellite motion, artificial satellites, escape velocity, circular orbits, planetary motion, Kepler's laws.

(5 hours)

Unit - 3

Motion of rigid bodies

Angular velocity, angular momentum and acceleration, kinetic energy in rotational motion, moment of Inertia of a body; calculation of moment of inertia of a disk, annular ring, solid sphere and rectangular bar; parallel and perpendicular axis theorems, torque and dynamics of rotational motion, Conservation of angular momentum with illustrations. (8 hours)

Periodic motion

Amplitude, period, frequency of period of oscillations, Simple harmonic oscillation; amplitude, frequency and energy in SHM, Simple and physical pendulum; damped oscillations; forced oscillations - concept of resonance; coupled oscillators.

(5 hours))

Unit - 4

Surface tension

Molecular interpretation of surface tension; Surface energy; Angle of contact and wetting, Pressure difference across a curved surface; Interfacial tension; Drop weight method with necessary theory, factors affecting surface tension. (4 hours)

Elasticity

Elasticity and plasticity, Stress and strain, elastic moduli, relationship between elastic constants, Poisson's ratio, work done in stretching a wire, bending of beams, bending moment, theory of single cantilever, couple per unit twist, torsional oscillations. (6 hours)

Viscosity

Laminar flow, the coefficient of viscosity, Poiseuille's method of measuring viscosity, temperature dependence of viscosity, Stokes' law.

(3 hours)

References

1. Fundamentals of Physics- R Resnick and D Halliday, 10th edition, Wiley, 2014.
2. University Physics Education, Sears and Zemansky, 13th Edition, Pearson, 2014.
3. Physics-Classical and Modern, FK Keller, WE Gettys and MJ Skove, McGraw Hill, 2nd Edition, 1989.
4. Concepts of Physics Vol (1)-HC Verma, Bharathi Bhavan Publishers, 2004.
5. Mechanics- Berkeley Physics Course Vol(1)- Mittal, Knight & Rudermann, TMH, Delhi, 1981.
6. Mechanics, K R Symon, 3rd Edition, Pearson, 2016.
7. Mechanics, S Datta, Pearson, 2012.
8. Oscillations and Waves – DP Khandelwal, Himalaya Publishing House, 1976.
9. Elements of Properties of matter – DS Mathur, Shamlal Charitable Trust, Delhi, 1996.
10. Properties of Matter - Brijlal & Subramanyam, S Chand & Co, 1982.
11. Newtonian Mechanics- AP French, Nelson & Sons UK, 1971.
12. Mechanics & Thermodynamics, G Basavaraju & Dipan Ghosh, TMH Publishing Limited, New Delhi, 1984.
13. A treatise on general properties of matter, Sengupta and Chatterjee, New Central Book Agency, Calcutta, 2001.
14. University Physics, Young and Freedman, Pearson, 2017.
15. College Physics, Vol I-A.B.Gupta, Books and Allied (P) Ltd, 2001(Revised Reprint: 2009)
16. Physics (A Calculus based approach)- Serway Jewett, India Edition Brooks/Cole CENGAGE Learning, 2007.
17. Waves and Oscillations, S L Kakani et al, CBS, 2002.
18. Waves, Berkeley physics course, F S Crawford, TMH, 2008.
19. Properties of matter, B H Flowers et al, Wiley, 1970.
20. Physics, 5th ed., J D Cutnell and Johnson, Wiley India, 2001.

Syllabus for I Semester B. Sc. (Physics)
PHY 102: Practical Physics – I

List of Experiments

1. Atwood machine – with photo gate.
2. Torsional pendulum – to determine C and Rigidity modulus.
3. Spring mass- (a) static case to determine 'k'
   (b) dynamic case to determine 'k'
   (c) 'k' as a function of L of spring
4. Bar pendulum – effective length and T.
5. Coupled oscillator – string coupled with change of tension.
6. Verification of parallel and perpendicular axis theorem.
7. Searle's double bar.
8. Work done by variable force.
9. Cantilever of negligible mass to find Young's modulus.
10. Young's modulus by Stretching.
11. Fly wheel.
12. Verification of principle of conservation of energy.

13. Determination of coefficients of static, kinetic and rolling frictions.
14. q by uniform bending.
15. q by single cantilever.
16. Surface and interfacial surface tension by drop-weight method.
17. Surface tension by capillary ascent, variation with concentration of salt.
18. Coefficient of viscosity by Stokes method.
19. Coefficient of viscosity using Poiseuille's method.

Note: A minimum of EIGHT (8) experiments must be performed.

References

1. B Saraf et al, Physics through experiments, Vikas Publications, 1980.
2. D P Khandelwal,A Laboratory Manual of Physics for Undergraduate Classes, Vani Publications, 1985.
3. Advanced Practical Physics for Students, Worsnop & Flint, Methuen & Co, London, 2011.
4. An Advanced Course in Practical Physics, D Chattopadhyay, P C Rakshit, B Saha, New Central Book Agency (P) Limited, Kolkata, Sixth Revised Edition, 2002
5. BSc Practical Physics, C L Arora, S Chand & Co, New Delhi, 2007.

BENGALURU CENTRAL UNIVERSITY
Syllabus for II Semester B. Sc. (Physics)
PHY 201: Thermodynamics and Kinetic Theory of Gases

Unit - 1

Basic Concepts and the zeroth law of thermodynamics

Macroscopic and microscopic descriptions of a system; Thermal Equilibrium - Zeroth Law of Thermodynamics; Concept of temperature; Thermodynamic equilibrium; Thermodynamic coordinates - extensive and intensive; Equations of state; Various processes - PVT indicator diagrams.

(3 hours)

First Law of Thermodynamics

The first law of Thermodynamics; Sign convention for heat and work; Work done in an isothermal process for an ideal gas; Internal energy as a state function; Application of the first law for (i) Cyclic Process (ii) Adiabatic Process (iii) Isochoric Process (iv) Isobaric Process and (v) Isothermal Process.

(3 hours)

Second Law of Thermodynamics

Reversible and irreversible processes; Carnot Cycle and its efficiency (with derivation); Second law of thermodynamics (Kelvin's & Clausius' statements and their equivalence); Carnot Engine; Practical internal combustion engines - Diesel Cycles (qualitative treatment).

(4 hours)

Entropy

The concept of entropy; Entropy of an ideal gas; Entropy - reversible process, Entropy - irreversible process; Entropy and the second law; Clausius inequality; Principle of increase of entropy; Entropy change in adiabatic and isobaric process; Entropy and disorder.

(3 hours

Unit - 2

Thermodynamic potentials

Internal Energy; Enthalpy; Helmholtz free energy; Gibbs free energy and their significance; Maxwell's thermodynamic relations and their significance; TdS relations; Energy equations and Heat Capacity equations; Third law of thermodynamics (Nernst Heat theorem).

(4 hours)

Phase transitions of the first order

Melting, vaporization and sublimation; Condition of equilibrium of phases in terms of Gibbs potential; Clausius-Clapeyron equation - elevation of boiling point, depression of freezing point; Equilibrium between phases - triple point.

(3 hours)

Conduction and convection

Heat transfer, thermal conduction, coefficient of thermal conductivity, conduction along a bar, Forbes method for thermal conductivity, conductivity of liquids, conductivity of gases, natural and forced convection, Reynold's number.

(6hours)

Unit - 3

Low Temperature Physics

Methods of producing low temperatures: (i) Joule Thomson (Joule Kelvin / Throttling / Porous plug) experiment, Joule Thomson Coefficient, inversion temperature (ii) Adiabatic demagnetization - working and theory.

(5 hours)

Liquefaction of gases

Cascade process; Regenerative cooling coupled with Joule Thomson cooling; Adiabatic expansion with Joule Thomson cooling (qualitative).

(3 hours)

Black body radiation

Kirchhoff's law, perfect black body, Stefan-Boltzmann law, spectral energy distribution, Wien's displacement law, Rayleigh-Jeans law, Planck's distribution(derivation), radiation pyrometry, temperature of the sun, the solar constant.

(5 hours)

Unit – 4

Kinetic Theory of Gases

Basic assumptions of the kinetic theory; Derivation of $pV = \frac{1}{3}mnc^2$ - deduction of perfect gas equation; Maxwell's law of distribution of velocity *(without derivation)*; Calculation of most probable velocity, mean velocity and root mean square velocity; Derivation of expression for mean free path; Degrees of freedom and principle of equipartition of energy; Derivation of $U = \frac{3}{2}RT$, Specific heats of an ideal gas, atomicity of gases

(7 hours)

Transport Phenomena

Viscosity and thermal conduction in gases *(with derivation)*; Relation between coefficient of viscosity and coefficient of thermal conductivity of a gas

(2 hours)

Real Gases

Derivation of van der Waal's equation of state; Andrews experiments on Carbon dioxide; Derivation of the critical constants; Comparison of van der Waal's isotherms with Andrew's isotherms

(4 hours)

References

1. Fundamentals of Physics- R Resnik, D Halliday and KS Krane, Asian Books Private Limited, New Delhi, 2014.
2. Heat and Thermodynamics- M M Zemansky,(International Edition) McGraw Hill New Delhi, 1981.
3. Heat & Thermodynamics, MW Zemansky & RH Dittman, McGraw Hill Book company, 5th Print, 1986.
4. Heat and Thermodynamics- Brij Lal and N Subramanyam, S Chand & Co, New Delhi, 1985.
5. Concepts of Physics Vol 1 and 2 - HC Verma, Bharathi Bhavan Publications, New Delhi, 1996.
6. Heat and Thermodynamics - DS Mathur, S Chand & Co, New Delhi, 5th Edition, 2004.
7. Heat, Thermodynamics & Statistical Physics, Brij Lal & Subramanyam, S Chand & Company, 2012.
8. Thermodynamics & Statistical Physics, Sharma & Sarkar, Himalaya Publishing House, 1991.
9. Thermodynamics, Kinetic theory & Statistical Thermodynamics, FW Sears & GL Salinger, Narosa Publishing House, 3rd Edition, 2013.
10. Mechanics & Thermodynamics, G Basavaraju & Dipan Ghosh, TMH Publishing Limited, New Delhi, 1984
11. Fundamentals of Classical Thermodynamics, Gordon J V Wylen & Richard E Sonntag, Wiley Eastern Limited, 1966.
12. Thermal Physics, S C Garg, R M Bansal & C K Ghosh, TMH Publishing Company, New Delhi, 2015.
13. Statistical Physics, Thermodynamics & Kinetic theory, V S Bhatia, S Chand & Co, 5th Edition,1993.
14. Perspectives of Modern Physics, Arthur Beiser, McGrawHill Book Company, Fourth Edition, 1987
15. Thermal Physics, B K Agarwal, Lokbharathi Publications, Allahabad, Third Edition 1993
16. Elements of Statistical Mechanics, Kamal Singh & SP Singh, S Chand & Co, 2nd Edition, 1992.
17. Theory & Problems of Thermodynamics, Michael M Abbott & Hendrick C Van Ness, Schaum's Outline Series, McGraw Hill International Book Company, Singapore, 1972.
18. University Physics-Sears & MW Zemansky, 2014.
19. Mechanics and Thermodynamics, C Basavaraju and D Ghosh, 1985.
20. Thermal Physics- *C* Kittel, Wiley, 6th edition, 1986.
21. An Introduction to Thermal Physics, D V Schroder, Pearson, 2014.
22. Heat and Thermodynamics, A K Saxena and Tiwari, Narosa, 2014.
23. College Physics, Vol I-A.B.Gupta, Books and Allied (P) Ltd, 2001(Revised Reprint: 2009).
24. Theory and Experiment on Thermal Physics- P.K.Chakrabarthi, New Central Book Agency(P) Ltd, 2006.
25. Thermal Physics and Statistical Mechanics-S.K.Roy, New Age International (P) Ltd Publishers, 2001.
26. Thermodynamics-M.S.Yadav, Anml Publication Pvt, Ltd, Second revised and Enlarged edition, 2000.

Syllabus for II Semester B. Sc. (Physics)
PHY 202: Practical Physics – II

List of Experiments

1. Specific heat by Newton's law of cooling
2. Specific heat of water using a thermistor
3. Thermal conductivity of a bad conductor by Lee's and Charlton's method
4. Thermal conductivity of rubber
5. Thermal behavior of a torch filament
6. γ- by measuring velocity of sound- using CRO
7. Verification of Newton's law of cooling and Stefan's law of radiation
8. Determination of Stefan's constant by emissivity method
9. Calibration of thermocouple for Temperature measurement
10. Verification of Clausius-Clapeyron equation using pressure cooker
11. Determination of Solar constant
12. Monte Carlo experiment & error analysis
13. Verification of Maxwell's distribution of velocity
14. Maxwellian distribution of velocities for electron using EZ81vacuum diode

Note: A minimum of EIGHT (8) experiments must be performed

References

1. B Saraf et al., Physics through experiments, Vikas Publications, 1980.
2. D P Khandelwal, A Laboratory Manual of Physics for Undergraduate Classes, Vani Publications, 1985.
3. Advanced Practical Physics for Students, Worsnop & Flint, Methuen & Co, London, 2011.
4. An Advanced Course in Practical Physics, D Chattopadhyay, PC Rakshit, B Saha, New Central Book Agency (P) Limited, Kolkata, Sixth Revised Edition, 2002
5. B SC, Practical Physics, C L Arora, S Chand & Co, New Delhi, 2007.

BENGALURU CENTRAL UNIVERSITY
Syllabus for III Semester B Sc. (Physics)
PHY 301: Electricity and Magnetism

Unit - 1

Network theorems

Concept of Voltage and Current Sources, Kirchhoff's Current Law, Kirchhoff's Voltage Law (statements). Principle of Duality (voltage and current source equivalents). Superposition theorem; Thevenin's theorem; Norton's theorem; Maximum power transfer theorem (for dc circuits - with problems)

(8 hours)

Magnetic fields and forces

Motion of charged particles in a magnetic field; Magnetic force on a current carrying conductor; Force and torque on a current loop, Concept of dead beat; Theory of a BG, Determination of high resistance by leakage.

(5 hours)

Unit - 2

Source of magnetic field

Magnetic field due to moving charge, Biot -Savart law; Magnetic field due to a straight current carrying conductor; Force between parallel conductors; Definition of ampere; Magnetic field of a circular loop; Theory of HTG; Field on the axis of a solenoid, Ampere's law, Application of Ampere's law to straight wire, solenoid and toroid.

(8 hours)

Electromagnetic induction

Faraday's laws; Lenz's law; Expression for induced emf; motional emf; earth inductor, mutual inductance, self inductance, the reciprocity theorem, the transformer, eddy currents and applications

(5 hours)

Unit - 3

Transient currents

Self inductance; Magnetic field energy stored in an inductor; Growth and decay of current in RC, LR, LCR circuits; Damped, under-damped and over-damped conditions.

(5 hours)

Alternating current

Alternating current circuits, Resistance, Reactance and Impedance; LCR series and parallel circuits, j-operator method Resonance, Power and energy in AC circuits, Representation of sinusoids by complex numbers, AC bridge - Maxwell bridge, Anderson's Bridge, the Skin effect.

(8 hours)

Unit - 4

Scalar and vector fields

Gradient of a scalar function; Relation between field and potential; Divergence and curl product rules; Physical Significance of Gradient, Divergence and Curl; Line, surface and volume integrals; Gauss' theorem, Stokes' theorems (statements only)

(3 hours)

Electromagnetic waves

Maxwell's equations (derivation and significance), The displacement current, Electromagnetic waves - Derivation of wave equation, Velocity of EM waves, Relation between refractive index and permittivity, Plane EM waves, Energy and momentum of EM waves, Poynting theorem (only statement), Significance of the Poynting vector, radiation pressure. (Qualitative)

(6 hours)

Polarization

Review of plane polarized light and method of production. Double refraction at crystals; Huygens' explanation of double refraction; Theory of retarding plates - Quarter wave plates and Half wave plates; Production and detection of linearly, elliptically and circularly polarized light. (4 hours)

References

1. Electricity and magnetism by Brij Lal and N Subrahmanyam, Rathan Prakashan Mandir, 19th Edition, 1993.
2. Principles of Electronics by VK Mehta and Rohit Mehta, S Chand & Company, 11th Edition, 2008.
3. Feynman Lecture series, Vol II, RP Feynman et al, Narosa Publishing House, New Delhi, 2013.
4. Electricity & Magnetism, NS Khare & SS Srivastava, AtmaRam & Sons, S Chand, New Delhi, 1973.
5. Electricity & Magnetism, DL Sehgal, KL Chopra, NK Sehgal, S Chand & Co, 6th Edition, 1988.
6. Electricity & Electronics, DC Tayal, Himalaya Publishing House, 6th Edition, 1988.
7. Basic Electronics & Linear Circuits, NN Bhargava, DC Kulshrestha & SC Gupta, TMH

Publishing Company Limited, 28th Reprint, 1999.
8. Fundamentals of Physics by Halliday, Resnick and Walker, Asian Books Private Limited, New Delhi, 5th Edition,1994.
9. Introduction to Electrodynamics, DJ Griffiths, 4th Edition, Pearson, 2015.
10. Electricity and electromagnetism, ICFAI, Pearson, 2012.
11. Electromagnetics by BB Laud, 3rd edition, New Age Internal Publishers, 2011.
12. Fundamentals of Magnetism and Electricity, D N Vasudeva, S Chand, 2013.
13. A Text Book of Electrical Technology- B.L.Theraja & A.K.Thereja, revised by S.K.Tarnekar-S.Chand and Company, 2005.

Syllabus for III Semester B Sc. (Physics)
PHY 302: Practical Physics – III

List of Experiments

1. To find L and C by equal voltage method
2. Energy consumption in an electrical circuit - to find power factor
3. Resonance in LCR series circuit
4. Resonance in LCR parallel circuit
5. Mirror galvanometer- figure of merit
6. High resistance by leakage using BG
7. Thermoelectric circuit -To find Seebeck coefficients
8. Study of thermo emf as a heat pump
9. Black box – identification & measurement of R, L and C
10. Verification of Thevenin's theorem
11. Verification of Superposition theorem
12. Verification of maximum power transfer theorem
13. Maxwell's impedance bridge
14. Desauty's bridge
15. Anderson's bridge

Note: A minimum of EIGHT (8) experiments must be performed

References

1. Physics through experiments, B Saraf etc, Vikas Publications, 1980.
2. Advanced practical physics, Chauhan & Singh, Pragathi Publications, 2017.
3. Practical Physics, D Chattopadhyaya et al, Central Publications.
4. An Advanced Course in Practical Physics, D Chattopadhyay, PC Rakshit, B Saha, New Central Book Agency (P) Limited, Kolkata, Sixth Revised Edition, 2002.
5. Practical Physics, TC Tayal.

BENGALURU CENTRAL UNIVERSITY
Syllabus for IV Semester B.Sc. (Physics)

PHY 401: Physical Optics, Lasers, Holography and Fiber Optics

Unit - 1

Wave Theory

Huygens' wave theory of light; Huygens' Principle; Construction Huygens' wave front; Laws of reflection and refraction using spherical wave front at a plane surface

(3 hours)

Interference – a Review:

Coherent sources and their production; Conditions for observing interference; Conditions for constructive and destructive interference

(1 hour)

Coherent sources by wave front division

Biprism-theory and working, experiment to determine wavelength; Effect of thin film in the path of one of the beams; Calculation of thickness of the film

(5 hours)

Coherent sources by amplitude division:

Interference at thin films - reflected and transmitted light Colours of thin films; Theory and experiment of air wedge; Theory and experiment of Newton's rings.

(4 hours)

Unit - 2

Fraunhoffer diffraction

Theory of single slit diffraction; Theory of grating - normal and oblique incidence - Experimental determination of wavelength; Discussion of Dispersive power; Resolution, Rayleigh's criterion; Expression for resolving power of grating and telescope; Comparison of prism and grating spectra

(6 hours)

Fresnel diffraction

Division of wave front into Fresnel's half period zones; Theory of rectilinear propagation using these ideas; Construction and working of Zone plate; Comparison of Zone plate with lens; Theory of diffraction at a straight edge

(7 hours)

Unit - 3

Lasers and their applications

Introduction; Spontaneous and stimulated emission; Einstein's coefficients and optical amplification; Population inversion; meta stable states, Main components of a laser; Lasing action; Ruby Laser - construction and working - energy level diagram; He-Ne Laser - construction and working - energy level diagram; Solid State Laser - construction and working; Chemical lasers, Characteristics of laser light, spatial and temporal coherence, divergence of laser light, laser tuning , Applications of lasers in science :Stimulated Raman Effect, lasers in industry : Laser Welding, Hole Drilling, Laser Cutting & LIDAR, lasers in medicine.

(13 hours)

Unit - 4

Holography

Principles of Holography, Recording of holograms, types of holograms, reconstruction of objects from holograms, applications of holography: 3D reconstruction, Interferometry.

(5 hours)

Optical Fibers

Optical fiber-principle, description and classification; Why glass fibers? Coherent bundle; Numerical aperture of fiber; Attenuation in optical fibers - limit Multimode optical fibers; Ray dispersion in multi-mode step index fibers; Dispersion due to material; Dispersion and maximum bit rates; Fiber optic sensors

(8 hours)

References

1. Introduction to Modern Optics, Ajoy Ghatak, Tata McGraw Hill Publications, 2009.
2. Fundamentals of Physics by Halliday, Resnick and Walker, Asian Books Private Limited, New Delhi, 10th Edition, 2014.
3. Contemporary Optics, A K Ghatak and K Thyagarajan, Macmillan, 1981.
4. Fundamental of optics, 4th Edition, Jenkins and White, Tata McGraw Hill, 2011.
5. Optics, E Hecht and Ganesan, Pearson, 2008.
6. Optics, BrijLal and Subramaniyam, S Chand & Company, 22nd Edition, 1994.
7. Principles of Optics, B K Mathur, Gopal Printing Press, Kanpur, 6th Edition,1996.
8. An Introductions to LASERS-Theory & Applications, MN Avadhanulu, S Chand & Co, 2001.
9. Introduction to Fibre Optics, Ajoy Ghatak & K Thyagarajan, Cambridge University Press, 1st Edition Reprint, 2002.
10. Optical Fibre Communications, Gerd Keiser, McGraw Hill, 3rd Edition, 2000.
11. Fibre Optic Communication, D C Agarwal, Wheeler Publications, 2nd Edition Reprint, 1996.
12. Optics, Klein and Furtak, Wiley Publications, 1986.
13. B B Laud, Lasers and nonlinear Optics, Wiley Eastern, 1987.
14. Introduction to Optics, G Chartier, Springer, 2010.

Syllabus for IV Semester B.Sc. (Physics)
PHY 402: Practical Physics – IV

List of Experiments

1. Verification of Brewster's law
2. Refractive index of a liquid by parallax method
3. Biprism – determination of wavelength of light
4. Air wedge – determination of thickness of object
5. Newton's rings – determination of radius of curvature of a lens surface
6. Diffraction grating in minimum deviation position
7. Diffraction grating in normal incidence position
8. Resolving power of telescope
9. Diffraction at straight edge
10. Polarimeter – determination of specific rotation of a solution
11. Diffraction of LASER at a wire
12. Fraunhoffer diffraction of LASER at single slit
13. Diffraction of LASER at graduations of a metal scale
14. Measurement of numerical aperture of an optical fiber

Note: A minimum of EIGHT (8) experiments must be performed

References

1. An Advanced Course in Practical Physics, D Chattopadhyay, PC Rakshit, B Saha, New Central Book Agency (P) Limited, Kolkata, 6th Revised Edition, 2002.
2. Practical Physics, Experiments with He-Ne laser, RS Sirohi, 1986.
3. Advanced Practical Physics, Worsnop & Flint, Asia Publishing house, 1961.
4. BSc, Practical Physics, CL Arora, S Chand & Company, New Delhi, 6th Revised Edition, 2002.

BENGALURU CENTRAL UNIVERSITY
Syllabus for V Semester B.Sc. (Physics)
PHY 501: Quantum Mechanics, Solid State Physics and Electronics

Unit -1

Quantum Mechanics

Failures of classical physics: Black body radiation spectrum- atomic spectra- photoelectric effect; de-Broglie's hypothesis and de-Broglie's wavelength; Davisson-Germer experiment; Heisenberg's uncertainty principle; γ-ray microscope experiment; wave function and its interpretation; Schrodinger's time dependent equation, time independent equation; Physical conditions on wave functions, Operators and Eigen values-Eigen functions, Expectation values of position, momentum and kinetic energy operators.

(9 hours)

Applications: Eigen values and eigen functions of a particle in one-dimensional box- particle in a three-dimensional box; Simple Harmonic Oscillator.

(4 hours)

Unit - 2

Solid State Physics

Free electron theory of metals: Electrical conductivity- classical theory (Drude-Lorentz model); Thermal conductivity; Wiedemann - Franz's law; Density of states for free electrons; Fermi-Dirac distribution function and Fermi energy; Expression for Fermi energy and Kinetic energy at absolute zero and above absolute zero (no derivation)

(5 hours)

Band theory of solids: Elementary ideas regarding formation of energy bands; Bloch equations; One dimensional Kronig-Penney model; Density of states; Effective mass; Energy gap

(4 hours)

X ray diffraction: Bragg's law; Types of crystals; Miller indices; the structure of NaC1 and KC1 crystals; Continuous and characteristic X-ray spectra; Mosley's law

(4 hours)

Unit - 3

Electronics

Basics of transistors and their operation, transistor amplifier(CE mode only), feedback concepts, transistor oscillators, Operational amplifiers; Ideal characteristics; The basic op-amps circuits; Inverting amplifier, Non-inverting amplifier; Applications of op-amp-summer, integrator, differentiator, voltage follower.

(8 hours)

Basic logic concepts

Logic states; Voltage range of high and low logic states; Number codes; Hexadecimal representation; BCD; Logic gates and truth tables; OR gate, AND gate; Inverter (the NOT function); NAND and NOR; exclusive OR; exclusive NOR.

(5 hours)

References

1. Fundamentals of Physics, Volume-II, Quantum Mechanics & Nuclear Physics, DK Chaturvedi & SK Gupta, S Chand & Co, New Delhi, 8th Edition, 2005.
2. Fundamentals of Quantum Mechanics, YR Waghmare, S Chand, New Delhi, 2014.
3. Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles – Eisenberg & Resnick, John Wiley & Sons, 1974.
4. Concepts of Modern Phyiscs, Beiser, Third Edition (Student Edition), New Delhi, 1981.
5. Introduction to Modern Physics, HS Mani & GK Mehta, West Press, 1989.

6. Modern Physics, Murugesan, S Chand & Co, 1996.
7. Quantum Mechanics, V Murugan, Pearson, 2014.
8. The Feymann Lectures on Physics Volume-III, Narosa Publishing House, New Delhi, 1963.
9. Elements of Modern Physics, SH Patil, TMH, New Delhi,1984.
10. Principles of Modern Physics, AP French, John Wiley, London, 1958.
11. Modern Physics, SN Ghoshal- Part –I & Part –II, S Chand & Co, 1996.
12. Solid State Physics, C Kittel, Wiley Eastern Limited, 5th Edition.
13. Solid State Physics, AJ Dekker, Macmillan India Limited, 1986.
14. Quantum Mechanics, Aruldass, PHI, 2012.
15. Solid state Physics, M Ali Omar, Pearson, 2005.
16. Solid State Physics, R J Singh, Pearson, 2011.
17. Digital Principles, D.P. Leach and A.P Malvino -Tata McGraw-Hill Education Pvt Ltd- (SIE) Special Indian Edition(7e), 2011.
18. Solid state Physics, K Ilangovan, MJP publishers, 2013.
19. Solid State Physics, M A Wahab, Norosa, 2007.
20. Quantum Physics, Berkeley Physics course, E H Wichman, TMH, 2008.
21. Quantum Mechanics, J Guha, Books and Allied, 2013.
22. Fundamentals of Quantum Mechanics, A B Gupta, Books and Allied, 2015.
23. Quantum Mechanics, Statistical Mechanics and Solid State Physics, S P Kulia, Books and Allied, 2015.
24. Textbook of Quantum mechanics, Mathews and Venkatesan, TMH, 2010.

Syllabus for V Semester B.Sc. (Physics)
PHY 502: Practical Physics V(A)

List of Experiments

1. CRO & its applications to (a) determine voltage of AC
   (b) determine frequency of AC
   (c) study the Lissajous patterns
2. Digital GATEs - Half adder & Full adder circuits.
3. Opamp - Inverter and Summing Amplifiers.
4. Opamp - differentiator and integrator.
5. Inverting and non inverting amplifier.
6. Realization of basic gates from NAND and NOR gates.
7. Wein Bridge Oscillator using OP AMP.
8. Phase Shift Amplifier using OP AMP.
9. Study of LASER diode – to draw its characteristics
10. Analysis of X-ray photograph.
11. Determination of crystal constant by analysis of diffraction pattern obtained by Laue's method.
12. Determination of crystal constant by analysis of diffraction pattern obtained by powder method.
13. Determination of Fermi energy.
14. Energy gap of semi conductor.
15. Transistor as a switch and an active device.
16. Determination of thermal conductivity of a material.
17. Resistivity of a material by four probe method.

18. Semi conductor temperature sensor
19. Thermal conductivity of a conductor.
20. Weidman-Franz law.
21. Hysteresis loop for iron and finding energy loss.
22. Measurement of dielectric constant.

Note: A minimum of EIGHT (8) experiments must be performed

References

1. An Advanced Course in Practical Physics, D Chattopadhyay, PC Rakshit, B Saha, New Central Book Agency (P) Limited, Kolkata, Sixth Revised Edition, 2002.
2. IGNOU-Practical physics manual.
3. Experiments in physics, Saraf.
4. Advanced practical physics, Raj kumar & Madan Lal.
5. Practical Physics, SP Singh.
6. Electronics, Bhargava et al, TTTI.
7. A lab course in electronics, Ramalingom & Raghupalan.

BENGALURU CENTRAL UNIVERSITY
Syllabus for V Semester B.Sc. (Physics)
PHY 503: Statistical, Atomic, Molecular and Nuclear Physics

Unit -1

Statistical Physics

Classical and quantum particles, identical particles, Wave functions of identical particles, Pauli's Exclusion Principle, Bose-Einstein and Fermi- Dirac Distributions, Maxwell-Boltzmann distribution, Applications of BE Statistics – Specific heat and pressure of a BE gas, Black Body Radiation. Einstein's Theory of Specific heat, Bose Einstein Condensation, Applications of FD Statistics – the pressure and specific heat of an FD gas, Super conductivity and super fluidity (qualitative).

(13 hours)

Unit -2

Atomic Physics

A brief account of the Sommerfeld atomic model (qualitative), Electron spin, Stern- Gerlach experiment, space quantization, the vector model of the atom, spin -orbit interaction, Fine structure of spectral lines, The Pauli's exclusion principle and the electronic configuration of atoms, The Normal Zeeman Effect (Quantum Theory).

(7 hours)

Molecular spectra

Pure rotational Spectrum and selection rules, vibrational spectrum and selection rules, Rotational-vibrational spectrum, scattering of light- Tyndall, Rayleigh and Raman's scattering, Experimental study of Raman Effect, Quantum theory of Raman effect, Applications of Raman effect.

(6 hours)

Unit -3

Nuclear physics

Alpha decay: Gamow's theory of alpha decay, Q-value of alpha decay, Exact energy of alpha particle emitted, characteristics of alpha spectrum, Geiger- Nuttal law.

Beta decay: Types of beta decay (electron, positron decay and electron capture,) Characteristics of beta spectrum and Pauli's neutrino hypothesis.

Detectors: Variation of ionization current with applied voltage in a gas counter, GM Counter.

Particle accelerator : Cyclotron, Tandem Van-de-Graff.

Nuclear reactions: Types of Nuclear reactions, Conservation laws, Expression for Q value of a nuclear reaction, Endoergic and Exoergic reactions, threshold energy.

(13 hours)

References

1. Fundamentals of Physics, Volume-II, Quantum Mechanics & Nuclear Physics, 8th edition, DK Chaturvedi & SK Gupta, R Chand & Co, New Delhi, 2005.
2. Introduction to Atomic & Nuclear Physics, HE White, Affiliated East West Press Private Limited, 1968.
3. Atomic and Nuclear physics, Brij Lal and Subramanyam, S Chand, 2013.
4. Spectra, HG Kaun, Atomic Physics, JB Rajam, S Chand & Co, 1979.
5. Modern Physics, Murugesan, S Chand & Co, 1996.
6. Elements of Modern Physics, SH Patil, TMH, New Delhi, 1984.
7. Principles of Modern Physics, AP French, John Wiley, London, 1958.
8. Modern Physics, SN Ghoshal, Part I & II, S Chand & Co, 1996.
9. Physics of the Atom, Wehr et al, McGraw Hill.
10. Nuclear Physics, Rajkumar, Campus Books International, New Delhi, 1st Edition, 2005.
11. Concepts of Nuclear Physics, B.L. Cohen, McGraw-Hill Book Co., New York, 1971.
12. Introductory Nuclear Physics, K.S. Krane, John Wiley & Sons, New York, 1987.
13. Elements of Nuclear Physics, W.E. Meyerhof, McGraw Hill Book Co., New York, 1971.
14. Atomic and Nuclear Physics, Vol. II, S.N. Ghoshal, S. Chand & Co., New Delhi, 1994.
15. Fundamentals of Physics, Extended 6th Edition, D. Halliday, R. Resnick and J. Walker, John Wiley & Sons, New York, 2002.
16. The Atomic Nucleus, RD Evans, Tata McGraw-Hill Publishing Company Limited, New Delhi, 1955.
17. Nuclear physics - Theory and experiment, R.R.Roy & B.P.Nigam, Wiley Eastern Limited, New Delhi, 1986.
18. Introduction to Nuclear Physics, Harald A Enge, Addison – Wesley Pub. Company, 1966.
19. Nuclear Physics, Irving Kaplan, Addison – Wesley, 1963.
20. Nuclear Physics, V Devanathan, Narosa, 2016.
21. Principles of Modern Physics, A K Sexena, narosa, 2007.
22. Modern Physics, R Murugeshan et al., S Chand, 2007.
23. Physics of the Atom, A B Gupta, Books and Allied, 2012.
24. Atomic and Nuclear Physics, A B Gupta, Books and Allied, 2017.

Syllabus for V Semester BSc (Physics)

PHY 504: Practical Physics V(B)

List of Experiments

1. Fine structure constant.
2. Vibration Band structure of Iodine molecule.
3. Absorption Band of KMnO4.

4. Rotation Spectra of Nitrogen molecule.
5. Rotation Vibration spectra of HBr.
6. Verification of Moseley's law.
7. SCR—characteristics
8. LED characteristics.
9. Study of LDR – to draw its characteristics.
10. Determination of dielectric constant.
11. Determination of electrical conductivity.
12. Study of Hydrogen spectrum – determination of Rydberg constant.
13. Characteristics of GM counter.
14. Linear and Mass Absorption Coefficient of Al using GM counter.
15. Verification of Inverse square law using GM counter.
16. Study of Photo diode – to draw its characteristics.
17. Study of Solar cell – to draw its characteristics.
18. MOSFET characteristics.
19. Study of LASER diode – to draw its characteristics.

References

1. IGNOU : Practical Physics Manual, IGNOU publications.

2. Saraf : Experiment in Physics, Vikas publications.

3. S.P. Singh : Advanced Practical Physics

4. Melissons : Experiments in Modern Physics.

5. Misra and Misra, Physics Lab. Manual, South Asian publishers (**2000**)

6. Gupta and Kumar, Practical physics, Pragati prakashan, (**1976**)

7. Ramalingom & Raghuopalan : A Lab. Course in Electronics

8. Bharagav et al : Electronics, TTI tata MacGraw Hill 33rd Reprint (**2002**)

BENGALURU CENTRAL UNIVERSITY

Syllabus for VI Semester B.Sc. (Physics)

PHY 601: Atmospheric Physics, Relativity and Astrophysics

Unit - 1

Atmospheric Physics

Composition of the earth's atmosphere, Weather and Climate, Vertical structure of the atmosphere, Fixed and variable gases, Mechanism of production and destruction of atmospheric constituents, Troposphere, Stratosphere, Mesosphere and Thermosphere. Temperature variation in the atmosphere, Lapse rate, Stability and Instability of atmosphere. Thermodynamics of dry air & moist air, Virtual temperature, Potential temperature, Scale height, Hydrostatic balance, Change of pressure with altitude, Total potential energy of air column, Green house effect, Climate change. Aerosols: Sources, size, distribution, transport and residence time.

(13 hours)

Unit – 2

Special theory of Relativity

Inertial frames of reference, the velocity of light, Michelson -Morley experiment, Einstein's postulates, Derivation of the Lorentz transformations, constancy of the speed of light, length contraction, time dilation, relative nature of simultaneity, the twin paradox, the law of addition of velocities, relativistic momentum, relativistic energy, rest mass, rest energy, mass- energy equivalence, muon decay lifetime, relativistic Doppler effect, relativistic collisions.

(13 hours)

Unit - 3

Astrophysics

Distances in astronomy- light year and parsec, solar and sidereal time scales, Luminosities, apparent and absolute magnitude scales, Stellar spectra, spectral classification, H-R diagram, Temperatures of stars, linear density model for stars (Calculation of Gravitational Potential Energy, Mean and core temperature and pressure based on lsm), Formation of stars (qualitative), Energy production in stars, the proton-proton cycle, Evolution of stars (qualitative), End stages of stars- white dwarfs, neutron stars and black holes (qualitative), Optical telescopes- their types, characteristics and applications.

(13 hours)

References

1. The physics of Atmosphere, 3rd Edition – John Houghton, Cambridge University Press, 2002.
2. An Intoduction to Atmospheric Physics, David.G.Andrews, Cambridge University Press, 2000.
3. An Introduction to Dynamic Meteorology, 4th Edition. James R Holton, Elsevier and academic press, 2004.
5. Meteorolgy for Scientists and Engineers, 2nd Edition. Ronald. B. Stull Brookes/Cole, 2000.
6. Meteorlogy – Understanding the Atmosphere, Steven. A. Ackerman, John. A. Knox Thomson/ Brooks/ Cole – 2003.
7. Meteorology, Ghadekar S R, Agromet Publishers, Nagpur-10 Maharashtra, 2001.
8. Concepts in Space science, R R Daniel (Editor), Universities press, ISRO, 2002.
9. Mechanics, D S Mathur, Vikas Publishing House, 1978.
10. Introduction to Astrophysics, Baidyanath Basu, Printice Hall, 1997.
11. An introduction to the study of stellar structure, Chandrasekhar S, Dover Publications, 2003.
12. Stellar Evolution – An exploration from the observatory, Thorne KS, Princeton University Press, 2016.
13. Fundamental Astronomy, Karltunen H, Oja H and others, Springer Verlag, 1987.
14. Introduction to Astrophysics, Baidyanath Basu, Printice Hall, 1997.
15. The New Cosmos, Unsold A, Springer – verlag, 1969.
16. Astronomy- a beginer's guide, Eric Chaisson, Pearson, 2017.
17. Introduction to Modern Astrophysics, Carroll & Ostlie, Pearson Eduction, 2006.
18. Introduction to Astronomy and Astrophysics, Pankaj Jain, CRC press, 2014.
19. Special Relativity, S P Puri, Pearson, 2013.
20. Introduction to Special Relativity- Robert Resnick- Wiley Student Edition, 2005.
21. A primer on Special relativity- P.L.Sardesai, New Age International Publishers, 2005.
22. Environmental Physics, C Smith, Routledge, 2001.
23. Astrophysics- stars and galaxies, K D Abhyankar, Univ. Press, 2007.
24. Astrophysics of the Solar system, K D Abhyankar, Univ. Press, 1999.
25. Modern Astronomy, C Sivaram and K Arun, Anne Books, 2009.
26. Astronomy and Astrophysics, A B Bhattacharya et al, Overseas Press, 2010.
27. India in Space, M S Rajan, PDBN, Govt. of India, 2008.

Syllabus for VI Semester B.Sc (Physics)

PHY 602: Practical physics VI (A)

List of Experiments

1. H R Diagram - Physical Properties of stars.
2. Determination of temperature of a star (artificial).
3. Analysis of stellar spectra.
4. Analysis of sunspot photographs & solar rotation period.
5. Determination of distance by parallax method.
6. Mass luminosity curve – Estimation of mass of a star
7. Mass of binary stars.
8. Temperature of air- by using Thermograph (Bimetallic type)- Plotting the graph of temperature vs. time.
9. Temperature of air- inside the room/ outside the room for 3 Hours duration.
10. Measurement of humidity and diurnal variation in absolute humidity- by using Hair hygrometer.
11. Relative humidity.
12. Wind speed.
13. Solar constant- determination.
14. Aerosol experiment.
15. Radiation measurement.
16. Evaporation experiment.
17. Effect of albedo on temperature.

Note: A minimum of EIGHT (8) experiments must be performed

References

1. IGNOU-Practical physics manual.
2. Physics through Experiments, Saraf and Khandewal, Vikas, 1994.
3. Advanced practical physics, SP Singh and Chavan, Pragati prakashan, 2017.
4. Experiments in Modern Physics, Adrian Melissinos, Academic Press, 2003.
5. An Advanced Course in Practical Physics, D Chattopadhyay, PC Rakshit, B Saha, New Central Book Agency (P) Limited, Kolkata, 6th Revised Edition, 2002.

BENGALURU CENTRAL UNIVERSITY

Syllabus for VI Semester B.Sc (Physics)
PHY603: Nano Physics, Material Science and Elementary particles

Unit -1

Nano materials: Introduction, classification, electron confinement, size effects, bulk materials, distinct properties of nano materials, Quantum dots, nanowires, nanofilms, multilayered materials, Fullerenes, Carbon nanotubes (CNT), Nano wires, Carbon Nano cones, Hackelites, Graphene, Synthesis techniques, characterization techniques, Production methods for CNT, Mechanical and Electric properties of CNT, Nano material advantages. Applications to fuel cells, phosphors, computer chips, sensors.

(13 hours)

Unit -2

Deformation of metals: Introduction, Elastic and Plastic deformation, Mechanism of deformation, Deformation by slip.

(3 hours)

Thermal properties: Introduction, heat capacity, Vibrational heat capacity, Dulong-Petit's law (classical model). Einstein's theory, Deby's theory (Qualitative), mechanism of heat conduction in metals, ceramics, Polymers and Superconductors.

(4 hours)

Optical properties of metals: Interaction of radiation with materials, Atomic transition, Absorption and emission of photons in metals, Optical properties of non-metals, Refractive index, Absorption coefficient, Luminescence, Photo conductivity.

(3 hours)

Superconductivity: Experimental observation, Critical field, Meissner effect, Types of super conductors. Phenomenological theories of super conductivity, London equations, B.C.S theory of super conductivity (qualitative), Application of super conductivity, Josephson effect (AC and DC).

(3 hours)

Unit - 3

Fundamental interactions: Gravitational, Electro-magnetic, Weak (nuclear) and strong (nuclear) interactions, Classification of elementary particles into Leptons, Quarks and force mediators .

(2 hours)

Leptons: Electron, mu meson, tau meson and the associated neutrinos. Lepton quantum number and antiparticles.

(2 hours)

Quarks: Properties of heavier mesons and baryons, Related quantum numbers such as strangeness, The eight-fold way. Anomalous properties of neutron and proton leading to the idea that they are not 'elementary particles'.

(3 hours)

The quark model of Gellmann and Zweig, Types of quarks, Flavor and colour, Quarks as constituents of proton. neutron and mesons, Qualitative explanation of spin and magnetic moment of nucleons.

(3 hours)

Force Mediators: Mediators for electro-magnetic, weak and strong interactions, Photon, W and Z bosons, and gluons. Higgs Bosons. The standard model of elementary particles.

(3 hours)

References

1. Material Science and Engineering. 2nd edition, William D. Callister, Adapted by R.Balasubramaniam, Wiley Publications, 2014.
2. Physical Foundation of Material Science, Gottesten Springer, Wiley Publication, 2004.
3. Material science. S.L.Kakani, Amit kakani, New Age International Publication, 1st Editon, 2004.
4. Rudiments of Material Science. S.D. Pillai, New Age International Publication, 2nd Edition, 2007.
5. Material Science and Engineering. V.Raghavan, PHI, 2002.
6. Foundation of material science and Engineering. Smith, 3rd Edition, Mc Graw Hill, 1997.
7. Introduction to particle physics, M P Khanna, PHI, 2009.

8. Nuclear Physics, D C Tayal, Himalaya pub. House, 2018.
9. Nanoscience and Technology, KK Choudhary, Narosa, 2018.
10. Science of Engineering Materials and Nanotubes, C.M.Srivatsa and C.Srinivasan, New Age International Publishers, 3rd Edition, 2010.
11. Introduction to Nano technology, Charles. P. Poole Jr and Frank J.Owes, Wiley Student Edition, Wiley India, 2006.
12. Nano - The Next revolution, Mohan Sundarajan, National Book Trust of India, Revised edition, 2010.
13. Callister's Material Science and Enginerng; William D Callister Jr,and David D. Rethwisch (Adapted by R Balasubramaniam), Wiley 2nd Edition.
14. Nuclear Physics, S N Ghoshal, S Chand, 2014.
15. Introductory Nuclear Physics, S S M Wong, PHI, 2010.
16. Nuclear and Particle Physics, B R Martin, Wiley, 2009.
17. Concepts of Particle physics, K Gottfried, OUP, 1986.
18. Introduction to high energy physics, D H Perkins, Addison Wesley, 1986.

Syllabus for VI Semester B.Sc. (Physics)
PHY 604: Practical physics VI(B)

List of Experiments

1. Determination of energy gap of semiconductor by four probes method.
2. Study of elastic deformation in metals.
3. Transistor amplifier.
4. Measurement of heat capacity of metals.
5. Ultrasonic interferometer- measurement of ultrasonic velocity in solids by Piezo-electric technique.
6. Kelvin's bridge.
7. AC bridges, Capacitance bridges.
8. Determination of energy gap of semiconductor by four probes method.
9. Thermal conductivity of glass.
10. Thermal conductivity of bad conductor by Forbes method.
11. Conductivity of solution of various concentrations by Kohlrousch's method.
12. Study of elastic deformation in metals.
13. Measurement of heat capacity of metals.
14. Ultrasonic interferometer- measurement of ultrasonic velocity in solids by Piezo-electric technique.
15. Calibration of spectrometer using a channel spectrometer by Edser-Buttler method and hence determine the thickness of mica sheet.
16. Measurement of refractive index of non -metals.
17. Study of crystals defects by analyzing photographs.
18. Study of Hysteresis curve using C.R.O.
19. Determination of Fermi energy of copper.
20. Dipole moment of organic liquid.
21. Curie – Weiss law.

Note: A minimum of Eight (8) experiments must be performed in the practical paper.

References

1. Practical Physics, G L Squires, CUP, 1999.
2. Advanced level Practical Physics, Nelkon and Parker, CBS, 1995.
3. Undergraduate physics, M M J French, Medtec, 2015.
4. A textbook of Practical Physics, H P Shrivastava, ABD publishers, 2006.
5. A lab manual of experimental physics, L R Ingersoll et al, McGraw Hill, 1953.
5. Physics Lab Manual, Misra and Misra, South Asian publishers, 2000.
6. Practical physics, Gupta and Kumar, Pragati prakashan, 1976.

BENGALURU CENTRAL UNIVERSITY

SYLLABUS FOR B.Com(Language ENGLISH)

CHOICE BASED CREDIT SYSTEM

(SEMESTER SCHEME)

2019-2020 onwards

Objectives:

1. To develop Communicative Skills in the students.
2. To hone their language skills to meet up with the demand of the real life situations.
3. To facilitate the acquisition of the skills of interpretation and appreciation of texts.
4. To sensitize the students to the study of literature.
5. To cultivate an analytical bent of mind and critical thinking.
6. To help them acquire the most essential job skills.
7. To inculcate social concern and social responsibility in students.
8. To broaden their horizon of human pursuits.

Syllabus designed for 45 hrs per Semester.

Course Book includes 2 parts: **A- Literature- 25hrs- 40 marks**

B- Language-20hrs- 30 marks

Written paper - **70 marks**

Internal marks - **30 marks**

Total - **100 marks.**

Themes :

- Human values
- Social responsibility
- Environment
- Gender Discrimination and Resistance
- Consumerism and Materialistic Culture
- Entrepreneurship
- Globalization
- Art and Entertainment

Proposed Syllabus for I B.Com - I Semester, BCU.

I B.Com: I Semester

Course Book:

1. African Short Story – Marriage Is a Private Affair by Chinua Achebe.
2. Indian Short Story – Acceptance by Bhaswar Mukherjee.
3. Short story – A Service of Love by O. Henry.
4. Pakistani Poetry – We Sinful Women by Kishwar Naheed
5. Poetry– Will - by Ella Wheeler Wilcox.
6. Sonnet -106 by William Shakespeare
7. Essay –The Sporting Spirit by George Orwell
8. Essay –Towards A Competitive Nation by Abdul Kalam (Autobiographical)

Work Book:

Correction of Sentences (5Marks)

Rearranging Sentences (5 Marks)

Comprehension Passages (5 Marks)

Expanding News Paper Caption (5 Marks)

Data Interpretation (5 Marks)

Idioms and Phrases (3 Marks)

Vocabulary [Round Words] (2 Marks)

Proposed Syllabus for I B.Com - II Semester, BCU.

I B.Com: II Semester

Course Book:

1. British Poetry – Endymion by John Keats
2. Indian Poetry – Freedom by Rabindranath Tagore
3. Contemporary writing--A cut above by Meena Bindra
4. Essay –Concepts of Gender
5. Indian Short Story – (to be replaced)
6. Russian Short Story – A Chameleon Anton Chekhov
7. Short Story –The Cop and the Anthem by O.Henry (Stand by)
8. Extract –My Beginnings by Kapil Dev.

Work Book:

Dialogue Writing (5Marks)

Précis Writing (5Marks)

Comprehension Passage (5 Marks)

Event Report Writing (5 Marks)

Paragraph Writing (5 Marks)

Vocabulary [Affixes- 3 Marks, Homonyms-2Marks] (5 Marks)

Proposed Question Paper Pattern
I Semester B.Com, BCU.
General English.

Time: 3 hours **Max. Marks: 70**

Section A

(Course Book -40 Marks)

I. Answer the following in two or three sentences each: [5out of 8 Questions] 5x2=10

II. Answer the following about a page each: 4x5=20

[4 out of 6 Questions, 1 from poetry compulsory]

III. Answer the following in about a two pages each: [1 out of 3 Questions] 1x10=10

Section B

(Workbook – 30marks)

Correction of Sentences	(5Marks)
Rearranging Sentences	(5 Marks)
Comprehension Passages	(5 Marks)
Expanding News Paper Caption	(5 Marks)
Data Interpretation	(5 Marks)
Idioms and Phrases	(3 Marks)
Vocabulary [Round Words]	(2 Marks)

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Proposed Question Paper Pattern

II Semester B.Com, BCU.

General English.

Time: 3 hours **Max. Marks: 70**

Section A

(Course Book - 40 Marks)

I. Answer the following in two or three sentences each: [5out of 8 Questions] 5x2=10

II. Answer the following about a page each: 4x5=20

[4 out of 6 Questions, 1 from poetry compulsory]

III. Answer the following in about a two pages each:[1 out of 3 Questions] 1x10=10

Section B

(Workbook – 30marks)

Dialogue Writing	(5Marks)
Précis Writing	(5Marks)
Comprehension Passage	(5 Marks)
Event Report Writing	(5 Marks)
Paragraph Writing	(5 Marks)
Vocabulary: Affixes 3 marks Homonyms 2 marks	(5 Marks)

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BENGALURU CENTRAL UNIVERSITY, BENGALURU

BA Economics Syllabus
(Semester)

With Effect from Academic Year
2019-20 Onwards

Bengaluru Central University, Bengaluru

B.A. Economics Syllabus (Effect from 2019-20 onwards)

FIRST SEMESTER		
I		Micro Economics(Hard core)
SECOND SEMESTER		
II		Macro Economics(Hard core)
THIRD SEMESTER		
III		Public Economics (Hard core)
		or
III		Development Economics (Hard core)
FOURTH SEMESTER		
Soft core		
IV		Introduction to Quantitative Methods for Economics
		or
IV		Introduction to Statistics for Economics
FIFTH SEMESTER		
V		Indian Economics (Hard core)
		Soft core
		Mathematical Methods for Economists
		Financial Economics
		Environmental Economics
		Economics for Infrastructure
Sixth Semester		
VI		International Trade Theory & Policy (Hard core)
		Soft core
		Research Methodology
		Human Resource management
		Indian Economic Thought
		Entrepreneurial Economics

I Semester BA

MICRO ECONOMICS

TOTAL CREDITS -3 **TOTAL HOURS- 60**

Course Learning Objectives:

- To acquaint the students with the basic concepts of microeconomics and its applications
- To acquaint theories that help students to understand economics of consumer and producer behaviour.
- To help students grasp theoretical nuances of theory of production, cost and distribution
- To help students learn the skills of plotting the numerical into a graphical representation of many concepts in the Micro Economic Theory.

Course Outcomes:

- Understand how utility, preferences, and income influence demand.
- Comprehend demand and supply interact in various market structures to determine the price and quantity of a good produced, Further, how input costs and substitution among factors influence supply.
- Apply with ease economic reasoning to individual and firm behaviour.
- Plotting numerical into a graphical representation of many concepts in the Micro Economic Theory.

Module – 1: Introduction to Micro Economics (08 Hours)

Meaning, Scope, Types – Importance and Limitations; Methodology in economics; Choice as an economics problem, basic postulates, Role of Price Mechanism; Law of Scarcity and Supply frame work, Production Possibility Curve.

Skill Development: Identifying the choice as an economic problem

Module -2: Consumer Behaviour (10 Hours)

Utility; Cardinal Approach - Law of Diminishing Marginal Utility, Law of Equi-Marginal Utility, Consumer's Surplus –Calculation of consumer's surplus;
Ordinal Approach– Indifference Curve – Meaning and properties, Effects on Equilibrium-Superiority of Ordinal analysis.

Skill Development: Calculation of CS and graphical representation.

Module 3: Demand and Supply Analysis (16 Hours)

Meaning of Demand, Factors affecting demand; Determinants of individual and market demand; law of demand; Demand schedule and demand curve, market versus individual demand; shifts in demand curve; Elasticity of demand-price, income and cross elasticity

Meaning of Supply, Factors affecting supply; Determinants of individual supply; Law of supply: supply schedule and supply curve, market versus individual supply; shifts in supply curve; Elasticity of supply; the short and long- run supply curve of the firm and the industry.
Shifts in the demand and supply curve together

Skill development: Derivation of demand and supply schedule.
Measurement of demand and supply elasticity: Percentage, Total Outlay, Point and Arc Methods

Module – 4: Theory of Production and Price (14 Hours)

Production decisions; Production Function; Laws of production –short run and long run, producers equilibrium and Isoquant curves, Economies & Diseconomies of Scale- Internal Economies of Scale and external economies of scale.

Different concepts of costs and their interrelation, equilibrium of the firm; expansion path; Empirical evidence on costs
Nature of Markets; Revenue Analysis, Price and output determination under perfect and imperfect markets (monopoly, monopolistic, and oligopoly)

Skill development –calculation of different types of costs and revenue

Module – 5: Theory of Distribution (12 Hours)

Theory of Distribution: Marginal productivity theory of distribution, Modern theory of distribution; Rent-Ricardian and Opportunity Cost theories, Quasi Rent, Wages –Real wages and Money Wages, the Modern theory of wage determination; Interest –Classical, and the Keynesian theory

Profit –Gross and Net Profit, Normal profit, accounting profit –Risk, Uncertainty and Innovation theories of Profit.

Skill development: Calculation of different types of profits.

References

1. Ahuja. H L (2018) Advanced Economic Theory-Microeconomic Analysis. S. Chand Publishing house, New Delhi
2. Bach, GL. (1977), Economics, Prentice Hall of India, New Delhi.
3. Gauld, J.P. and Edward P.L (1996), Microeconomic Theory, Richard. Irwin, Homewood.
4. Koutsoyiannis, A. (1990), Modern Microeconomics, Macmillan.
5. Lipsey Richard and Chrystal Alec(2015) Economics 13th Ed, Oxford University Press
6. Robert S. Pindych, Daniel L. Rubinfeld and Prem L. Mehta. (2009) Microeconomics. Pearson International Edition
7. Varian, H.R. (2000), intermediate Microeconomics: A modern Approach (5th Edition), East West Press, New Delhi.
8. Varian, Hal R. (2010) Intermediate Microeconomics: A Modern Analysis, 8thedition, Norton & Company (London)

II Semester BA

MACRO-ECONOMICS

Teaching hours per week-5 Hours Total teaching hours-60 Hours

Course Learning Objectives:

- To understand the macroeconomic behaviour through national income accounts.
- To learn the analytical framework of macroeconomic concepts used by classical, Keynesian and post-Keynesian approaches
- To know different types of inflation and their relationship with employment

Course Outcomes:

- Use national income accounts to describe and analyze the macroeconomic issues in quantitative terms.
- Understand the forces behind the employment generation as reflected by different schools of thought and its limitations
- Understand the different views on the supply of money and demand for money.

Module 1: Introduction to Macro-Economics (07 Hours)

Macro economics: meaning, nature, scope, importance and limitation- Meaning of stock and flows- circular flow of income, importance of circular flow model -two sectors, three sectors and four sectors model

Skill Development: Draw the two sectors, three sectors and four sectors model and identify the differences

Module 2: National Income Accounting (08 Hours)

National income accounting: meaning and definition-concepts, importance, methods and difficulties in measuring national income- ways to increase national income- empirical problems – calculation of national income.

Skill Development: calculate national income, NNP, Personal income, disposable personal income

Module 3: Classical and Keynesian theory of Employment (17 Hours)

Classical theory of employment and Says law of Market-Full employment, Adam smith's invisible hand, wage- price flexibility- critical evaluation

Keynesian theory- concepts of effective demand and its determinants; Consumption Function-Average and Marginal propensity to consume, Psychological law of consumption, determinants of consumption function;

Theory of Investment-Autonomous and induced Investment, Marginal Efficiency of Capital; Relevance and critic of Keynesian policies.

Skill Development: Determine Effective Demand by taking the data on aggregate demand price and the aggregate supply price and do the graphical representation

Module 4: Supply of Money and Demand for Money (14 Hours)

Definitions of Money supply; Money supply and Value of Money; Classical and Keynesian views on the supply of money, determinants of money supply, high powered money, money multiplier

Demand for Money; The Classical Approach, The Keynesian Approach, Liquidity preference, The Post-Keynesian Approaches

Skill Development: Calculate the M1, M2, M3 and M4
Calculate money multiplier

Module 4: Inflation and Business Cycle (14 Hours)

Definitions of Inflation, causes of Inflation, Types of Inflation-demand push inflation and cost push inflation; inflationary gap; Relationship between inflation and unemployment- The Philips curve-short and long run; Effects of Inflation, Measures to control Inflation

Business Cycles- Meaning, types of the business cycle, features of the business cycle, phases of business cycle; Control of Business Cycles.

Skill Development: Derive the graphical model showing the relationship between unemployment and inflation using the short-run Phillips curve and the long-run Phillips curve

Reference books

1) Ackley, G. (1976), Macroeconomics: Theory and Policy, Macmillan Publishing Company, New York.
2) Ahuja H (2016), Macro Economics- theory and policy, S Chand and Co
3) Dwivedi DN (2016) Macro Economics: Theory and Policy, Tata McGraw-Hill Education
4) Heijidra, B.J. and F.V. Ploeg (2001), Foundations of Modern macroeconomics, Oxford University Press, Oxford.
5) Keynes, J.M. (1936), The General theory of Employment, Interest and Money, Machmillan, London.
6) Lucas, R. (1981), Studies in Business Cycle Theory, MIT Press, Cambridge, Massachusetts.
7) Shapiro, E. (1996), Macroeconomics Analysis, Galgotia Publications, New Delhi.

Public Economics

3rd Semester BA

Teaching hours per week-5 Hours **Total teaching hours-60 Hours**

Course Learning Objectives

- To learn about the importance of Public Economics in the economic development
- To understand the role of State & Public sector in the economic development.
- The focus on understanding the key issues relating to the government spending, taxing debt and budget.

Course Outcomes

- Good acquaintance with the concepts, tools, and issues in Public Economics.
- Understand the characteristics of good tax, public expenditure and public debt
- Understand the tenets of generation of State Revenue, Taxes, Expenditure and Budget analysis.

Module: 1 Introduction to Public Economics. (12 Hours)

Meaning, Nature and Scope of Public Economics, Objectives, Importance of Public Economics; Fiscal functions of the State; Role of Government in different forms of the economic system-Capitalist, Socialist and Mixed Economy; Role of Public Sector, Private and Public Finance, Public goods v/s private goods, principle of maximum social advantage.

Skill Development: Plot the maximum social advantage with the help of diagram

Module: 2 Public Expenditure (08 Hours)

Meaning, Scope and justification of Public Expenditure, causes and effects of Public expenditure on production, employment and distribution, causes of Increase in Public expenditure – Wagner's hypothesis, Peacock –Wiseman hypothesis.

Skill Development: Do the simple Analysis of the Wagner Hypothesis of Government Expenditure taking data of Government of India's Public expenditure

Module: 3 Public Revenue **(12 Hours)**

Source of public revenue, Taxation- meaning, canons and classification of taxes, The benefit and ability approaches, characteristics of a good tax system, impact and incidence of taxes, taxable capacity, effects of taxation, devolution of tax resources between Central and State Government.

Skill Development: list out the different criteria adopted by various finance commission in the devolution of resources between centre and state.

Module: 4 Public Debt **(12Hours)**

Meaning of public debt, Sources of public borrowing- classification of public debt, economic effects of public debt, the burden of public debt- internal burden of public debt, external burden of public debt, redemption of public debt- various ways, Advantages of debt redemption; Public debt management- objectives, principles.

Skill Development: Plot the diagram taking the data of Government of India's internal and external debt over the years with the help of diagram

Module: 5 Fiscal Policy and Budget **(16Hours)**

Meaning of fiscal policy-definitions, objectives of fiscal policy, instruments of fiscal policy

Concept of budget, characteristics of the budget, purposes of the budget, canons of public budgeting, significations of public budgeting, types of budgets – executive and legislative multiple and unified budgets, federal, state and local budgets, revenue and capital budget, performance budgeting, Zero based budgeting- advantages and limitations.

Skill Development: Plot the Revenue and capital expenditure as percentage of spending of the latest central and state budget in a graph and observe the trend

Reference Books:

1. Bird, Graham (2004), International Finance and the Developing Economies, Palgrave Macmillan
2. Hindriks J., G. Myles (2006), Intermediate Public Economics, MIT Press,
3. John Cullis and Philip Jones (1998) Public Finance and Public Choice, Oxford University Press, 1st edition
4. Joseph E. Stieglitz,(2000) Economics of the Public Sector, W.W. Norton & Company, 3rd edition,
5. Kaushik Basu and A. Maertens (ed.) (2013), The New Oxford Companion to Economics in India, Oxford University Press
6. Musgrave R.A. and P.B. Musgrave(1989), Public Finance in Theory & Practice, McGraw Hill Publications, 5th edition
7. Rosen H, Gayer T. (2009), *Public Finance*, 9th ed., McGraw-Hill/Irwin

III Semester BA

Development Economics

Teaching hours per week-5 Hours **Total teaching hours-60**

Course Learning Objectives:

- To familiarize the students with the concepts, structure and issues in the economics of development.
- To acquaint them with the theories of development and their importance and limitations
- To understand the sector view of development
- To acquaint with Environment and Sustainable Development

Course Outcomes:

- Students will learn different measurement indicators of development and its limitations
- Critical understanding of the concepts and topics in economics of development and their applications.
- Enhance the analytical power on different approaches of development.
- Understand the Importance and role of the environment in sustainable development in the background of climate change

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Module-1: Introduction to Development Economics (15 Hours)

Definitions, characteristics, importance and nature of Development Economics; Development & growth-concepts and differences; Development gap;

Measurement indicators-GDP, GNP, PQLI, HDI, World happiness index, Gender development indices, Gender Empowerment measure.

Skill Development: learn the computation of PQLI, HDI, WHI, GDI, GEM

Module-2: Theories of Economic Development (12 Hours)

Theories of development – classical theories of development-Adam Smith, Ricardo and JS Mill; Karl Marx in the theory of development – theory of social change; immutable laws of capitalist development –crisis in capitalism; Schumpeter and capitalistic development

Skill Development: List out the changes, over the years, in the perspective of the crisis of capitalism

Module-3: Approaches to the Economic Development (12 Hours)

Partial theories of growth and development, vicious circle of poverty, circular causation, unlimited supply of labour, big push, balanced growth, unbalanced growth, critical minimum effort thesis, low income equilibrium trap- dualism: technical, behavioral and social.

Skill Development: Draw vicious cycle of poverty, circular causation and low level equilibrium trap

Module-4: Sectoral view of Development (11 Hours)

Role of agriculture in economic development; land reforms-importance; efficiency and productivity in agriculture

Role, rational and pattern of industry growth in economic development; the choice of technique, appropriate technology and employment: small scale vs. large scale production; terms of trade between agriculture and industry.

Skill Development: Identify the changes in the terms of trade between agriculture and industry in monetary terms and draw a diagram

Module- 5: Environment and Sustainable Development (10 Hours)

Definition, Importance and role of environment in sustainable development; environment – economy linkage; Need for sustainability for renewable resources, a brief history of environmental change, common pool resources, environmental externalities and state regulation of the environment, economic activity and climate change.

Skill Development: list the UN's Sectoral Development Goals

References:

1. Adelman, I. (1961), Theories of Economics Growth and Development, Stanford University Press, Stanford.
2. Arrow, Kenneth J and Michael D. Intriligator (2010),Handbook of Development Economics, Elsevier.
3. Basu, Kaushik (2003).Analytical Development Economics, MIT Press
4. Behrman, S. and T.N. Srinivasan (1995), handbook of Development Economics, Vol. 1 to 3, Elsevire, Amsterdam.
5. Chenery, Hollis and T N Srinivasan (1988). Handbook of Development Economics, Elsevier
6. Hayami, Y. (1997). Development Economics: From the Poverty to the Wealth of Nations, Oxford, Clarendon Press.
7. Higgins, B. (1959), Economic Development, Norton, New Delhi.
8. Kindleberger, C.P. (1977), Economic Development, 3rd Edition, McGraw Hill, New York.
9. Mariano (2008).Experienced Poverty and Income Poverty in Mexico: A Subjective Well–Being Approach, World Development, Vol. 36(6), 1078–1093.
10. Naqvi, Syed NawabHaider (2002). Development Economics – Nature and Significance, Sage, New Delhi.
11. Panagariya, Arvind (2008). India the Emerging Giant, Oxford University Press.
12. Ray, D., (1998). Development Economics, Princeton University Press.
13. Sen, Amartya (1999), Development as Freedom, Oxford University Press.
14. Todaro, M.P. and S.C.Smith, (2003), Economic Development (8th Edition), Pearson

BENGALURU CENTRAL UNIVERSITY

BA

SYLLABUS FOR POLITICAL SCIENCE

CHOICE BASED CREDIT SYSTEM

(SEMESTER SCHEME)

2019-2020 onwards

PROCEEDINGS OF THEMEETING OF THE BOARD OF STUDIES IN POLITICAL SCIENCE (UG) FOR BENGALURU CENTRAL UNIVERSITY HELD ON 29th MARCH 2019 at 11.30 AM IN THE CANARA BANK SCHOOL OF MANAGEMENT STUDIES, CENTRAL COLLEGE CAMPUS, BENGALURU – 560 001.

Members Present:

1.	Prof. Muzaffar H. Assadi Special Officer, Raichur University, GU PG Centre, Jnanatunga Campus, Yeragera, Raichur	Chairman
2.	Mrs. Usha H N Assistant Professor AcharyaPatashala College of Arts and Science, N.R. colony, Bangalore-19	Member
3.	Sri. K.H. Prakash Associate Professor Basaveshwara College of Arts, Science and Commerce, 2nd Block, Rajajinagar, Bangalore-10	Member 29/3/19
4.	Mr. RevappagoudaPatil Associate Professor HKES Veerendrapatil Degree College,11th main, 11th Cross, Sadashivanagar, Bangalore-80	Member
5.	Dr.Nagesh M Associate Professor Maharani Arts, Commerce & Management College for Women,Sheshadri Road, Bangalore-9	Member
6.	Mr. Somaiah P.E Associate Professor, Dept. of Political Sc., St. Joseph's College of Arts & Science, (Autonomous) P.B. No.27094, Lalbhagh Road, Bengaluru -27.	Member
7.	Mrs. Mahalakshmi. K Assistant Professor S.J.R College for Women 1/D, 59th C Cross, 4th M Block, Rajajinagar, Bengaluru 560 010	Member
8.	Dr. Sannaswamy, Department of Pol. Science, Siddaganga College for Women, BH Road, Tumkur	Member 29/03/19
9.	Dr. RajaramTolpadi, Retired Professor of Political Science	Invitee

The Chairman welcomed the members to the UG BOS meeting of Bengaluru Central University. Board after a detailed discussion with regard to preparation of Syllabus has resolved as follows:

1) The Board scrutinized the syllabus and incorporate changes and necessary modification and approved the same
2) The Board also recommends to the university to conduct at least two workshops before the commencement of academic year on the proposed syllabus for the teachers of BCU (Political science)
3) The Board also resolved to approve the proposed seam of examination including the Credit system
4) The Board recommended to increased number teaching hour existing four hours to five hours for Final year (fifth and sixth semester)
5) The Board is resolved to recommend that the paper on the constitution should be ~~thought~~ taught by teachers of political science and law only

The Chairman thanked the members for their presence and participation in the discussion

29/03/19

Member

Member

Member

Member

Member

Member

Member

Invitee

Chairman

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

The B.A Political Science Course is a Choice Based Credit System (Semester Scheme) spread over six semesters. The objective of the course is to provide a firm grounding in the subject, imbibe analytical skills and to develop a realistic and pragmatic perspective on the local, regional, national and international issues that figure in the syllabus.

The syllabus has been designed according to the needs of BCU. Many new and innovative papers are being offered in keeping with the changing times and circumstances, as well as the larger societal needs. The titles and detailed contents of the papers are mentioned below. All the Papers in the syllabus are provided with an extensive Reading list.

Course objectives

- Emphasis on value-based politics studies.
- Imparting knowledge of the science, art and skills of governance and administration
- Gain an understanding of National and International political Issues.
- Create discursive scholars and active citizens
- Mould politically responsible and conscious citizens.
- Motivating students to appear for competitive examinations and prepare them for other careers.

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

BA I YEAR SEMESTER I
Paper 1 – Core Concepts of Political Science

SEMESTER II
Paper 2 – Political Theory

BA II YEAR SEMESTER III
Paper 3.1 –Modern Governments: Government of USA and UK
Or
3.2-Indian Government and Politics
(Institutions can offer one or both the papers)

BA II - SEMESTER IV
Paper 4.1- Political Thought
Or
4.2- Indian constitution- Processes
(Institutions can offer one or both the papers)

BA III - SEMESTER V
Paper 5.1 - Public Administration

Paper 5.2 - International Politics

BA III – SEMESTER VI
Paper 6.1- Advanced Public Administration

Paper 6. 2 - International Organization and Foreign Policy

COMPULSORY PAPER-Indian Constitution and Human Rights

1st Semester B.COM, BBA

2nd Semester BA, BSC, BCA, BFA,BHM

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

QUESTION PAPER PATTERN

BA CHOICE BASED CREDIT SYSTEM (SEMESTER SCHEME)

Total Marks: 100 Time: 3 hours

NOTE: Read Instructions carefully. All parts are compulsory except for their internal options.

PART – A

Instructions: Answer any three from the following in about 60 words each. All questions carry equal marks. 3x5 = 15 marks

1)
2)
3)
4)
5)

PART – B

Instructions: Answer any four from the following in about 200 words each. All questions carry equal marks. 4x10 = 40 marks

1)
2)
3)
4)
5)
6)

PART – C

Instructions: Answer any three from the following in about 400 words each. All questions Carry equal marks. 3x15 = 45 marks

1)
2)
3)
4)
5)

Bengaluru Central University

COURSE PATTERN, SCHEME OF EXAMINATION AND CREDITS
BA, POLITICAL SCIENCE CHOICE BASED CREDIT SYSTEM

(SEMESTER SCHEME)

Subject	Papers	Instruction hrs Per Week	Duration Of Exam	Marks IA	Marks Exams	Marks Total	Credits
Paper -1	Core Concepts of Political Science	1x5	1x3	1x50	1x100	1x150	1x3
Paper -2	Political Theory	1x5	1x3	1x50	1x100	1x150	1x3
Paper -3.1 Or Paper 3.2	Modern Governments: Government of USA and UK Indian Government & Politics	1x5	1x3	1x50	1x100	1x150	1x3
Paper – 4.1 Or Paper 4.2	Political Thought Indian Constitution-processes	1x5	1x3	1x50	1x100	1x150	1x3
Paper -5.1	Public Administration	1x5	1x3	1x50	1x100	1x150	1x3
Paper -5.2	International Politics	1x5	1x3	1x50	1x100	1x150	1x3
Paper -6.1	Advanced Public Administration	1x5	1x3	1x50	1x100	1x150	1x3
Paper -6.2	International Organization and Foreign Policy	1x5	1x3	1x50	1x100	1x150	1x3

Compulsory Paper for all U.G. Courses - Indian Constitution & Human Rights

Subject	Papers	Instruction hrs Per Week	Duration Of Exam	Marks IA	Marks Exams	Marks Total	Credits
Paper	Indian Constitution & Human Rights	1x4	1x3	1x30	1x70	1x100	1x3

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

BREAK UP OF INTERNAL ASSESSMENT MARKS

MID-SEMESTER TESTS	25
ASSIGNMENTS	15
SEMINAR/PROJECT/PARTICIPATION	10
TOTAL	**50**

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

I semester

PAPER-1 -CORE CONCEPTS OF POLITICAL SCIENCE

Unit I

Introduction: Meaning, Nature, Scope and Importance of Political Science; Approaches to the study of Political Science: Normative, Empirical, Behavioural and Post-Behavioural

Unit II

State: Meaning, Nature and Elements of State;
Theories of Origin of State: Divine, Social Contract, Evolutionary & Marxist theory.
State in the age of Globalisation, State and Civil Society.

Unit III

Sovereignty: Meaning, Characteristics and Types.
Theories – Monistic and Pluralistic.

Unit IV

Law: Meaning, Sources and Types.
Liberty: Meaning & Types.
Equality: Meaning & Types
Justice: Meaning & Kinds
Inter-relationship between Law, Liberty, Equality.

Unit V

Power, Authority, Legitimacy, Political Obligation.
Rights and Duties: Meaning. Kinds – Civil, Economic and Political.
Citizenship - Meaning & Kinds; citizenship and rights
Human Rights and their safeguards.

Essential Reading

Vinod, M.J. and Deshpande, M. (2013). *Contemporary Political Theory.* New Delhi: PHI Learning.
Johari, J.C. (2012). *Contemporary Political Theory.* New Delhi: Sterling.
Heywood, A. (2007). *Political Ideologies.* New Delhi: Palgrave Macmillan.
Heywood, A. (2007). *Politics.* New York: Palgrave Macmillan.
Bhagwan, V. and Bhushan, V. (2011). *Principles and Concepts of Political Theory.* Noida: Kalyani.
Mahajan, V.D. (2010). *Political Theory.* New Delhi: S Chand.
Singhal, SC. (2009). *Political Theory.* Agra: Lakshmi Narain Agarwal.
Gokhale, B.K. (2006). *Political Science: Theory and Governmental Machinery.* Mumbai: Himalaya Publishing House.
Kapur, A.C. (2006). *Principles of Political Science.* New Delhi: S. Chand.
Appadorai, A. (2005). *The Substance of Politics.* New Delhi: OUP.
Laski, H.J. (2007). *Grammar of Politics.* New Delhi: Surjeet.

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

II semester

PAPER- 2 – Political Theory

Unit I

Political Theory: Nature and Scope; Traditions of political theory- Idealist, Materialist, Conservative, Liberal & Radical Perspectives.

Unit II

Liberalism: Meaning, Nature and Characteristics; Types – Classical, Utilitarian, Libertarian and Neo-Liberal.

Unit III

Socialism: Meaning and Elements:
Early Socialism – Charles Fourier, St. Simon, Robert Owen, Proudhon.
Marxism: Marx, Lenin and Mao.
Democratic Socialism.

Unit IV

Democracy: Evolution and Meaning.
Types – Direct and Representative (Territorial, Minority, Proportional, Functional).
Theories of Democracy-Classical, Liberal and Pluralist,
Models of Democracy – Deliberative, Associational and Participatory.
Challenges before Democracy.

Unit V

Ideologies: Imperialism and Colonialism, Nationalism Fascism, Gandhism, and Feminism.

Essential Reading

Vinod, M.J. and Deshpande, M. (2013). *Contemporary Political Theory.* New Delhi: PHI Learning.
Johari, J.C. (2012). *Contemporary Political Theory.* New Delhi: Sterling.
Heywood, A. (2007). *Political Ideologies.* New Delhi: Palgrave Macmillan.
Heywood, A. (2007). *Politics.* New York: Palgrave Macmillan.
Bhagwan, V. and Bhushan, V. (2011). *Principles and Concepts of Political Theory.* Noida: Kalyani.
Mahajan, V.D. (2010). *Political Theory.* New Delhi: S Chand.
Singhal, SC. (2009). *Political Theory.* Agra: Lakshmi Narain Agarwal.
Gokhale, B.K. (2006). *Political Science: Theory and Governmental Machinery.* Mumbai: Himalaya Publishing House.
Kapur, A.C. (2006). *Principles of Political Science.* New Delhi: S. Chand.
Appadorai, A. (2005). *The Substance of Politics.* New Delhi: OUP.
Laski, H.J. (2007). *Grammar of Politics.* New Delhi: Surjeet.

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

II Year Third Semester

Paper -3.1 – Modern Governments:

Unit I

Introduction: meaning of constitution, constitutionalism and Government; classification of Governments- Traditional, Monarchy and Aristocracy; Modern – Federal, Unitary, Parliamentary and Presidential;

Unit II

Government of United Kingdom: salient features, conventions, Monarchy- Powers and Functions, Prime Minister and Council of Ministers- powers and functions.

Parliament -House of Lords and House of Commons: composition powers and functions.

Rule of Law , Party system.

Unit III

Government of USA: Making of the US Constitution, Salient features, Congress: House of Representatives and Senate - Composition, Powers and Functions,

President: Election powers and functions.

Judiciary: Supreme Court -Composition, Jurisdiction and working; Judicial Review

Political parties and pressure groups – Role, Lobbying.

Unit IV

South Africa: Salient Features, parliament: Composition, Powers and Functions.

Executive: powers & Functions.

Party System.

Unit V

Government of China: Features of 1982 constitution, National People's congress (powers & Functions), President – powers, functions and position; Premier- Powers and functions; communist party and Politburo

READINGS

1. Neil Schlagler and Jayne Weisblatt (2013) World Encyclopedia of Political Systems and Parties (Viva Books: New Delhi)
2. Daniele Caramani (2012), Comparative Politics (Oxford University press, New Delhi) 3.
A.C.Kapur, Select Constitutions
4. V.K.Khanna, Comparative Study of Government and Politics
5. J.C.Johari, Major Modern Political systems
6. K.K.Ghai, Select Political Systems
7. K.K.Ghai, Modern Governments

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

II Year Third Semester

Paper – 3.2 Indian Government and Politics

Unit I

Introduction: constitutionalism in India (with special Reference to Acts of 1909, 1919, 1935 and 1947 Acts).

Constituent Assembly & Framing of the Constitution.

Philosophy of the constitution – the Preamble & Salient Features. Debate on Basic Structure

Unit II

Key Concepts: Citizenship; Fundamental Rights and Duties; Directive Principles of State Policy; Secularism and Socialism

Unit III

Union and State Legislature: Composition, powers and functions. Presiding officers. Law making process. Committee system. Debate on the working of the Legislatures.

Unit IV

Union and State Executive: President and Vice – President - Method of election, powers and functions. Prime Minister and the Council of Ministers - powers and functions.

Governor, Chief Minister and Council of Ministers – Powers and Functions.

Parliamentary and Presidential forms of government: debate.

Unit V

Union and State Judiciary: Supreme Court and High Courts - composition and jurisdiction. Judicial review.

Public interest litigation and judicial activism. Judicial Reforms.

Essential Reading

Bakshi, P.M. (2012). *The Constitution of India.* New Delhi: Universal Law.

Fadia, B.L. (2013). *Indian Government and Politics.* Agra: Sahitya Bhawan.

Ghai, K.K. (2012). *Indian Government and Politics.* Noida: Kalyani.

Ghosh, P. (2012). *Indian Government and Politics.* New Delhi: PHI Learning.

Avasthi, AP. (2012). *Indian Government and Politics.* Agra: Lakshmi Narain Agarwal.

Kashyap, S. (2011). *Our Parliament.* New Delhi: National Book Trust.

Kashyap, S.C. (2011). *Our Constitution.* New Delhi: National Book Trust.

Saxena, R. and Singh, M.P. (2011). *Indian Politics: Constitutional Foundations and Institutional Functioning.* New Delhi: PHI Learning.

Chakrabarty, B. and Pandey, R.K. (2008). *Indian Government and Politics.* New Delhi: Sage.

Johari, J.C. (2004). *The Constitution of India: A politico-Legal Study.* New Delhi: Sterling.

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

II Year Fourth Semester

Paper-4.1 - Political Thought

Unit I

Ancient Greek Political Thought: Greek philosophical traditions; Plato- Ideal City State, Justice, Education, Communism and Philosopher King; Aristotle – State, Citizenship, Classification of Constitutions and Revolution.

Unit II

Medieval Political Thought – Roman Political thought – An introduction.
Church and State in Medieval Europe; St. Augustine and St. Thomas Aquinas.
Transitory political thought- Machiavelli.

Unit III

Foundations of Liberal Political thought-
Thomas Hobbes, John Locke
French Enlightenment - J.J.Rousseau & Voltaire.

Unit IV

Early Indian political traditions: Manu, Shukracharya, Kautilya and Shanthiparva

Unit V

Modern Indian Political Thought and tradition: Gandhi, Nehru, Ambedkar & Moulana Azad

READINGS

1. Sharma S.K and Urmila Sharma ((2013) Western Political Thought, Volumes1&2, (New Delhi: Atlantic Publishers)
2. Stephen Trombley (2012) Fifty Thinkers Who Shaped the Modern World (London: Atlantic Books)
3. Shefali Jha (2010) Western Political Thought: From Plato to Marx (New Delhi: Pearson)
4. Brian R. Nelson (2007) Western Political Thought: From Socrates to the Age of Ideology(New Delhi: Pearson Education)
5. R.P. Kangle (2010) Kautilya's Arthasastra (New Delhi: Motilalal Banarsidass Publishers)
6. C.L.Wayper (1979) Political Thought (Bombay: BI Publishers)
7. George Sabine - A History of Political Thought 8. D.R. Bhandari - History of European Political Philosophy 9. P.G. Das - History of Political Thought

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

II Year Fourth Semester

Paper-4.2- Indian constitution- Processes

Unit I

Federalism: Unitary and federal features; Union – State relations- Legislative, Administrative and Financial.

State Autonomy: Sarkaria Commission Recommendation; NCRWC (National Commission to review the working of the Constitution (NCRWC- Justice M.N Venkatachaliah Commission report) recommendations on Centre- State Relations.

Unit II

Constitutional Amendments: Amendment Procedures – Important Constitutional Amendemnts-1st, 24th, 42nd, 44th, 73rd, 74th, and 104th.

Unit III

Political parties and pressure groups: Party System in India.

National and Regional parties.

Politics of Pressure group

Unit IV

Electoral System: Features of Indian Electoral System: Constitutional Provisions – Representation of People's Act, 1951; Election Commission – Organization, Powers & Functions. State Election Commission – powers & Functions.

Political Defections & Anti Defection Law (52 nd Amendment).

Electoral Reforms.

Unit V

Major Debates: Secularism-communalism; Development and underdevelopment; Majority VS Minority: Social Movements in Contemporary Indian- Formers, Dalits, Ecology and Working class

Essential Reading

Bakshi, P.M. (2012). *The Constitution of India.* New Delhi: Universal Law.

Fadia, B.L. (2013). *Indian Government and Politics.* Agra: Sahitya Bhawan.

Ghai, K.K. (2012). *Indian Government and Politics.* Noida: Kalyani.

Ghosh, P. (2012). *Indian Government and Politics.* New Delhi: PHI Learning.

Avasthi, AP. (2012). *Indian Government and Politics.* Agra: Lakshmi Narain Agarwal.

Kashyap, S. (2011). *Our Parliament.* New Delhi: National Book Trust.

Kashyap, S.C. (2011). *Our Constitution.* New Delhi: National Book Trust.

Saxena, R. and Singh, M.P. (2011). *Indian Politics: Constitutional Foundations and Institutional Functioning.* New Delhi: PHI Learning.

Chakrabarty, B. and Pandey, R.K. (2008). *Indian Government and Politics.* New Delhi: Sage.

Johari, J.C. (2004). *The Constitution of India: A politico-Legal Study.* New Delhi: Sterling.

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

III year Fifth semester

Paper 5.1 - Public Administration

Unit I

Introduction

Meaning, nature and scope of public administration; Evolution of the discipline of Public administration; Significance of public administration; Private and Public Administration

Unit II

Theories and Principles of Organization

Organization-Meaning and types; Principles of organization- Hierarchy, Unity of command and Span of control. Theories of organization- Scientific Management theory (Taylor and his associates), Classical theory of organization (Henry Fayol), Human relations theory (Elton Mayo and his associates) Bureaucratic theory (MaxWebber);

Unit III

Structure of Administrative organization

Chief Executive- Power and functions; Line, Staff and Auxiliary agencies; Departments; Public corporations; Government companies; Boards and commissions

Unit IV

Dynamics of Management

Leadership- Meaning, qualities and types; Communication-Meaning, methods and Barriers; Planning-Meaning and kinds; Public relations- Meaning and nature; Entrepreneurship – Meaning & Nature (Peter Drucker)

Unit V

Personnel administration

Meaning and objectives; Position classification; Recruitment; Training; Promotion; Discipline; Pay and retirement benefits; Generalist versus Specialist debate.

Essential Reading

Sharma, M.P. et al. (2012). *Public Administration in Theory and Practice.* Allahabad: Kitab Mahal.

Polinaidu, S. (2013). *Public Administration.* New Delhi: Galgotia.

Henry, N. (2012). *Public Administration and Public Affairs.* New Delhi: PHI Learning.

Fadia, B.L. and Fadia, K. (2011). *Public Administration: Administrative Theories and Concepts.* New Delhi:

Sahitya Bhawan.

Sapru, RK. (2011). *Public Policy: Art and Craft of Policy Analysis.* New Delhi: PHI Learning.

Basu, R. (2005). *Public Administration: Concepts and Theories.* New Delhi: Sterling.

Bhagwan, V. and Bhushan, V. (2005). *Public Administration.* New Delhi: S. Chand.

Bhattacharya, M. (2011). *New Horizons of Public Administration.* New Delhi: Jawahar.

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

III year Fifth semester

Paper 5.2 - INTERNATIONAL POLITICS

Unit I

International Politics: Nature, Scope and Importance; Theories - Idealist, Realist theories, Systems theory, Game theory and Decision Making Theory

Unit II

Nation state and National power: idea of Nation state, National Power- Meaning & Elements; national Interest: Meaning and Elements; Foreign Policy- Meaning, Formulation and Implementation. Diplomacy: Meaning, Types and Functions

Unit III

War and Global Terrorism

War: Meaning, Nature, Types, Causes and Remedies of war.

Global Terrorism: Meaning & Features; Role of State & Non- State Actors in Global Terrorism, Combating Terrorism.

Unit IV

Approaches to International Peace: Balance of Power; Collective Security; Pacific Settlement of International Disputes; Disarmament and Arms Control – Problems and Issues.

Unit V

International Law and Human Rights: Nature, Sources and Sanctions of International Law; Role of UN and UNHR; Role of Non-Governmental Organisations in the promotion of Human Rights.

Essential Reading

Palmer, N.D. and Perkins, H.C. (2007). *International Relations.* New Delhi: AITBS.

Malhotra, V.K. (2001). *International Relations.* New Delhi: Anmol.

Kumar, M. (1995). *Theoretical Aspects of International Politics.* New Delhi: Shiva Lal Agarwala.

Goldstein, J.S. (2007). *International Relations.* New Delhi: Pearson.

Ghai, K.K. (2005). *International Relations: Theory and Practice of International Politics.* New Delhi: Kalyani.

Ghai, UR. (1988). *International Politics.* Jalandhar: New Academic Publishing.

Jaitley, A. (1983). *International Politics: Major Contemporary Trends and Issues.* New Delhi: Sterling.

Prakash, C. (1985). *International Politics.* New Delhi: Vikas.

Srivastava and Joshi. (1997). *International Relations.* Meerut: Goel.

Ramkrishna, H.T. (1993). *International Relations.* Tiptur: Lalitha Prakashana.

Appadorai, A. and Rajan, M.S. (1985). *India's Foreign Policy.* New Delhi: South Asian Publishers.

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

III year Sixth semester

Paper 6.1- Advanced Public Administration

Unit I

Financial Administration

Nature and importance of budget
Formulation, Legislation & Implementation of budget
Performance budget
Zero base budgeting system

Unit II

Accountability and Control

Concept of Accountability and Control
Legislative, Executive and Judicial control over administration
Citizen and Administration
Central Vigilance Commission
Lokapal and Lokayukta

Unit III

Administrative power- Administrative adjudication and Delegated legislation; Meaning, Growth, Merits & Demerits, Safeguards

Unit IV

New Frontiers

Comparative Public Administration
Development Administration
New Public Administration
New Public Management

Unit V

Contemporary Issues

Governance to Good Governance
E-Governance
Right to Information (RTI)
Food Security Act, 2013 and forest dwellers act-2006

Essential Reading

Sharma, M.P. et al. (2012). *Public Administration in Theory and Practice.* Allahabad: Kitab Mahal.
Polinaidu, S. (2013). *Public Administration.* New Delhi: Galgotia.
Henry, N. (2012). *Public Administration and Public Affairs.* New Delhi: PHI Learning.
Fadia, B.L. and Fadia, K. (2011). *Public Administration: Administrative Theories and Concepts.* New Delhi:
Sahitya Bhawan.
Sapru, RK. (2011). *Public Policy: Art and Craft of Policy Analysis.* New Delhi: PHI Learning.
Basu, R. (2005). *Public Administration: Concepts and Theories.* New Delhi: Sterling.
Bhagwan, V. and Bhushan, V. (2005). *Public Administration.* New Delhi: S. Chand.
Bhattacharya, M. (2011). *New Horizons of Public Administration.* New Delhi: Jawahar.

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

III year Sixth semester

Paper 6.2 – International Organization and India's Policy

Unit I

International Organization

International Organizations: League of Nations.- Origin, purposes, principles and organization and working; Achievements. Shortcomings

United Nations – Origin, purposes, principles and organization and working; Achievements, shortcomings and Reforms.

Unit II

International Political Economy: meaning & fundamentals

Regional co-operation – European Union (EU), ASEAN, SAARC, BRICS, African Union, SAFTA and OAU

Unit III

International Relations in the context of Globalization: Global Economic Governance; Neo-Liberalism, World Bank, IMF, WTO.

Unit IV

Major Issues in International Politics: NIEO (New International Economic Order), North South & South- South Dialogue; Global Governance

Unit V

Foreign Policy of India: Features, Objectives and Trends (Looking East Policy, India and the N.A.M).

India's relations with Major Powers- U.S.A, Russia and China.

India's Relations with Neighbours- Pakistan, Bangladesh, Srilanka and Nepal

Essential Reading

Palmer, N.D. and Perkins, H.C. (2007). *International Relations.* New Delhi: AITBS.

Malhotra, V.K. (2001). *International Relations.* New Delhi: Anmol.

Kumar, M. (1995). *Theoretical Aspects of International Politics.* New Delhi: Shiva Lal Agarwala.

Goldstein, J.S. (2007). *International Relations.* New Delhi: Pearson.

Ghai, K.K. (2005). *International Relations: Theory and Practice of International Politics.* New Delhi:Kalyani.

Ghai, UR. (1988). *International Politics.* Jalandhar: New Academic Publishing.

Jaitley, A. (1983). *International Politics: Major Contemporary Trends and Issues.* New Delhi: Sterling.

Prakash, C. (1985). *International Politics.* New Delhi: Vikas.

Srivastava and Joshi. (1997). *International Relations.* Meerut: Goel.

Ramkrishna, H.T. (1993). *International Relations.* Tiptur: Lalitha Prakashana.

Appadorai, A. and Rajan, M.S. (1985). *India's Foreign Policy.* New Delhi: South Asian Publishers.

Bengaluru Central University

DEPARTMENT OF POLITICAL SCIENCE

INDIAN CONSTITUTION AND HUMAN RIGHTS

(Compulsory Paper for all U.G. Courses)

Chapter 1: **Indian Constitutional philosophy**

a) Features of the constitution; preamble
b) Fundamental Rights and Fundamental Duties
c) Directive Principles of State Policy

Chapter 2: **Union and state Legislature, Executive and judiciary**

a) Union parliament and state Legislature: Powers and functions
b) President, prime minister and council of ministers
c) State Governor, Chief minister and council of ministers
d) The Supreme Court and High Court; Powers and Functions

Chapter 3: **Concept and Development of Human Rights**

a) Meaning Scope and Development of Human Rights.
b) First, Second, Third and Fourth Generation Human Rights
c) U.N. and Human Rights – UNHRC
d) Human Rights Groups- Amnesty international & Human Rights Watch.

Chapter 4: **Human Rights in India**

a) Protection of Human Rights Act,1993 (NHRC and SHRC)
b) Judicial Activism and Human Rights
c) Women Rights, Child rights, Green Rights, Minority rights, Tribal rights and LGBT Community.

Essential Reading

Bakshi, P.M. (2012). *The Constitution of India.* New Delhi: Universal Law.
Fadia, B.L. (2013). *Indian Government and Politics.* Agra: Sahitya Bhawan.
Ghai, K.K. (2012). *Indian Government and Politics.* Noida: Kalyani.
Ghosh, P. (2012). *Indian Government and Politics.* New Delhi: PHI Learning.
Avasthi, AP. (2012). *Indian Government and Politics.* Agra: Lakshmi Narain Agarwal.
Kashyap, S. (2011). *Our Parliament.* New Delhi: National Book Trust.
Kashyap, S.C. (2011). *Our Constitution.* New Delhi: National Book Trust.
Saxena, R. and Singh, M.P. (2011). *Indian Politics: Constitutional Foundations and Institutional Functioning.* New Delhi: PHI Learning.
Chakrabarty, B. and Pandey, R.K. (2008). *Indian Government and Politics.* New Delhi: Sage.
Johari, J.C. (2004). *The Constitution of India: A politico-Legal Study.* New Delhi: Sterling.

ಬೆಂಗಳೂರು ಕೇಂದ್ರ ವಿಶ್ವವಿದ್ಯಾಲಯ
BENGALURU CENTRAL UNIVERSITY
Central College Campus, Dr. B.R. AmbedkarVeedhi, Bengaluru – 560 001.
Ph. No.: 080 – 22131385, E-Mail:bcucb @gmail.com / registrarbcu@gmail.com

No. BCU/BOS/History /268/2019-20 Date.01.08.2019.

NOTIFICATION

Sub: Revised Syllabus for BA History of Bengaluru Central University

Ref: 1. The Office Notification No:BCU/BoS/History /204/2019-20 dated 09.07.2019.
2. Letter received on 30.07.2019 from the Chairman, BoS in History(UG)
3. Approval of the Vice-Chancellor dated 31.07.2019.

***

The Chairman, Board of Studies in History (UG) vide letter cited at reference (2) above has stated that the BoS deliberated the thematic and structural issues relating to the Syllabus notified vide Notification cited at reference (1) above and revised the Syllabus with minor corrections for the academic year 2019-20.

Accordingly, the revised BA History Syllabus of Bengaluru Central University is hereby notified in place of the earlier Syllabus for implementation from the academic year 2019-20.

The copy of the revised Syllabus is notified in the University Website : www.bcu.ac.in for information of the concerned.

REGISTRAR 1/8/19

To,

1. The Dean, Faculty of Arts, BCU.
2. The Chairman & Members of BoS in History (UG), BCU.
3. The Principals of the concerned affiliated Colleges of BCU – through email.
4. The P.S. to Vice-Chancellor/Registrar/Registrar (Evaluation), BCU.
5. Office copy / Guard file.

Revised

BENGALURU CENTRAL UNIVERSITY

B.A History (CBCS)

The B.A History Course is a Choice Based Credit System (Semester Scheme) spread over in Six Semesters. The syllabus has been designed keeping in view the vision of BCU. The focus of the course is to make the students understand the Self reflective nature of History, its epistemological bearing and contemporary relevance to situate the present. It also provides the students an opportunity to know the interwoven nature of local, regional, national and global histories. Students are introduced to important the phases of human history, with a firm grounding in Indian history and culture. Significant space has been provided to study the local and regional history.

Another important aspect of the designed syllabus is that it introduces students to the theoretical debates on certain select themes in Indian history, which is quite necessary to build competitiveness among the students.

It is hoped that the syllabus would stimulate a sense of objective understanding of the past and enable them to contextualizing the present. Further, a critical approach to the syllabus will prepare the students for civil services and other examinations.

The titles and detailed content of the papers are given along with this. Extensive reading list has also been provided for each paper.

This syllabus will come into effect from 2019-20 for the students admitted to I semester during the academic year 2019-20 and onwards.

Aswathanarayana
Chairman BOS(B.A History)

The Chairperson and Members of the Board of Studies in History (UG)

1.	Dr. Aswathnarayana, Professor, Dept. of History, Bangalore University, Jnana Bharathi, Bengaluru- 560 056.	Chairman
2.	Dr. Puttaraj P, Associate Professor, BMS College for Women, Basavanagudi, Bengaluru - 560 004	Member
3.	Sri. N.B. Shankar, Associate Professor, Basaveshwara College of Arts, Science and Commerce, 2nd Block, Rajajinagar, Bengaluru -560 010	Member
4.	Smt. Sujatha C Lagali, Associate Professor, Acharya Patashala College of Arts and Science, N.R. Colony, Bengaluru -560 019	Member
5.	Dr Ramanjaneya P, Associate Professor, M.E.S College of Arts, Science & Commerce, Malleshwaram, Bengaluru -560 003.	Member
6.	Dr. Anuradha V, Associate Professor, Maharani Arts, Commerce & Management College for Women, Sheshadri Road, Bengaluru -560009	Member
7.	Dr.Chikkachennaiah, Associate Professor Government First Grade College, 2nd Block, Rajajinagar, Bengaluru - 560010	Member
8.	Mrs. Mubeen Taj, Associate Professor, Government Arts College, Dr.Ambedkar Veedhi, Bangalore-560001	Member
9.	Dr. Govindappa, Professor, Dept. of History, Rural College, Kanakapura.	Member
10.	Dr. Mohan Krishna Rai, Professor, Dept. of History, Kannada University, Hampi Vidyaranya – 583 276	Member

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(11)

BENGALURU CENTRAL UNIVERSITY

Department of History

B.A Syllabus

Semester – I

Paper –1. History of Ancient India

Semester – II

Paper –2. Early Medieval India 300 CE – 1200 CE

Semester – III

Paper –3. Medieval India 1206 CE – 1707 CE

Semester – IV

Paper – 4 Modern Indian History

Semester – V

Paper 5.1 Modern Europe to 1945 CE (Compulsory paper)

5.2 History of Karnataka up to 1956 CE (Optional paper)

OR

5.3 Women in History (Optional paper)

Semester – VI

Paper 6.1 Bengaluru in Time and Space (Compulsory paper)

6.2 Select Debates in Indian History (Optional)

OR

6.3 Book Review (Optional paper)

B.A History (CBCS)								
Course pattern, Scheme of Examination and Credits								
Subject	Papers		Instruction per week	Duration of Examination	Marks IA	Marks Exam	Total Marks	Credits
Sem I paper I	History of Ancient India		1X5	1X3	1X50	1X100	1X150	1X3
Sem I paper II	Early Medieval India 300CE to 1200		1X5	1X3	1X50	1X100	1X150	1X3
Sem I paper III	Medieval India		1X5	1X3	1X50	1X100	1X150	1X3
Sem I paper IV	Modern Indian History		1X5	1X3	1X50	1X100	1X150	1X3
Sem I paper V	5.1	Modern Europe to 1945 CE	1X5	1X3	1X50	1X100	1X150	1X3
	5.2	History of Karnataka up to 1956 CE (optional)	1X5	1X3	1X50	1X100	1X150	1X3
OR								
	5.3	Women in History (optional)	1X5	1X3	1X50	1X100	1X150	1X3
Sem I paper VI	6.1	Bengaluru in Time and Space	1X5	1X3	1X50	1X100	1X150	1X3
	6.2	Select Debates in Indian History	1X5	1X3	1X50	1X100	1X150	1X3
OR								
	6.3	Book Review (optional)	1X5	1X3	1X50	1X100	1X150	1X3

Department of History

Question paper pattern (B.A History, CBCS- This pattern does not apply to the papers V semester 5.3, VI semester 6.3)

Total Marks: 100

Time: 03 hours

Instructions: 1) All sections are compulsory

2) Answers should be written completely either in Kannada or in English.

3) In part 'A' the blind students have to write only historical importance of places given. They are exempted from marking the places. Note on each historical place carries two marks.

Part A

I a) Map Work with notes 1X10 = 10

OR

b) Places of Historical Importance [Five places and a note on the importance of each historical place]

Part B

Answer any Three of the following. 3X5 = 15

1.
2.
3.
4.
5.

Part C

Answer any Three of the following 3X10 = 30

1.
2.
3.
4.
5.

Part D

Answer any three from the following

3X15 = 45

1.
2.
3.
4.
5.

Department of History

Question paper pattern (B.A History, CBCS, This Pattern applies only to the Papers V semester 5.3 and VI semester 6.3)

Total Marks: 100
Time: 03 hours

Instructions:

1) All sections are compulsory
2) Answers should be written completely either in Kannada or in English.

Part A

Answer any three of the following in about 60 words each.
3X5 = 15

1.
2.
3.
4.
5.

Part B

Answer any Four of the following in about 200 words each.
4X10 = 40

1.
2.
3.
4.
5.

Part C

Answer any three from the following in about 400 words each.
4X15 = 45

1.
2.
3.
4.
5.

Department of History

B.A History

Break up of Internal Assessment Marks

1. Mid-Semester Tests		25
2. Assignments		15
3. Seminar		10
	Total	50

BANGALORE CENTRAL UNIVERSITY- B.A. HISTORY SYLLABUS 2019-20

1ST SEMESTER-PAPER 1

HISTORY OF ANCIENT INDIA

2ND SEMESTER-PAPER 2

EARLY MEDIEVA INDIA 300-1200 C E

3RD SEMESTER -PAPER 3

MEDIEVAL INDIA 1206 C E – 1707 C E

4TH SEMESTER -PAPER 4

MODERN INDIAN HISTORY

5TH SEMESTER

PAPER 5.1 - MODERN EUROPE 1945 C E (COMPULSORY PAPER)

PAPER 5.2- HISTORY OF KARNATAKA UPTO 1956 CE (OPTIONAL PAPER)

OR

PAPER 5.3 -WOMEN IN HISTORY (OPTIONAL PAPER)

6TH SEMESTER

PAPER 6.1 -BANGALORE IN TIME AND SPACE (COMPULSORY PAPER)

PAPER 6.2 –SELECT DEBATES IN INDIAN HISTORY (OPTIONAL PAPER)

OR

PAPER 6.3 – BOOK REVIEW (OPTIONAL PAPER)

FIRST SEMESTER-B.A

PAPER-1 HISTORY OF ANCIENT INDIA

UNIT-1

Sources-Archaeology-Epigraphy-Numismatics-Literature-Indigenous and foreign accounts.

Different approaches to reconstructing Ancient Indian History.

Orientalist Historians - With special reference to William Jones, Max Mullar

Utilitarian Historians - Jeremy Bentham, John Stuart Mill

Nationalist Historians - K.P. Joyaswal, P.V. Kane

Marxist Historians - D.D. Kosambi, R.S. Sharma

UNIT-2

Pre Harappan and Stone age cultures - Neolithic culture in south India

Harappan culture- Town planning

Harappan agriculture-Religion-Script-Decline of Harappan Culture

UNIT-3

Vedic Age

The Aryan Debate-Indo European Languages-Archeological excavations-Interface between Harappan and post Harappan Cultures.

Vedic literature-Samhitas-Nature of Economy-Pastroralism and Social organisation-political institutions-religious practices

Later Vedic period-Geographical expansion-Introduction of Iron-PGW-Emergence of Varna system-Changes in the social outlook.

UNIT-4

Age of Mahajanapadas-Agrarian expansion-Second urbanisation-Emergence of Guilds-Sixteen Mahajanapadas-overseas contact.

Rise of Heterodox Religions – Background- Protest against Orthodoxy – Doctrinal foundations of Jainism and Buddhism – Contributions.

UNIT-5

Rise of Magadha Kingdom and Nandas – Chandragupta Maurya–Ashoka- Arthashastra- Indica-Ashokan edicts, Society- Economy- Mauryan Art- Mauryan Administration- Ashoka's Policy of Dhamma- Kushanas
Shatavahanas – Sangam Age.

MAP WORK

1. Harappan Sites
2. Ashokan Edicts
3. Mahajanapadas

PLACES OF HISTORICAL IMPORTANCE:

1 Harappa 2 Mohenjodaro 3. Lothal 4. Bodh Gaya 5. Saranath 6. Pataliputra 7. Taxila 8. Kashi

9. Kosambi 10. Rajagriha 11.Ujjayani 12. Lumbini 13. Maski 14. Pattanam 15. Sannathi

16. Pavapuri 17. Sravana Belagola 18. Amaravathi 19. Kushinagara 20.Uraiyur

REFERENCE BOOKS

1. R.S. Sharma, India's Ancient Past, New Delhi, OUP, 2007

2. R. S. Sharma, Material Culture and Social Formations in Ancient India, 1983.

3. R.S. Sharma, Looking for the Aryas, Delhi, Orient Longman Publishers, 1995

4. D. P. Agrawal, The Archaeology of India, 1985

5. Bridget & F. Raymond Allchin, The Rise of Civilization in India and Pakistan, 1983.

6. A. L. Basham, The Wonder that Was India, 1971.

7. D. K. Chakrabarti, The Archaeology of Ancient Indian Cities, 1997, Paperback.

8. D. K. Chakrabarti, The Oxford Companion to Indian Archaeology, New Delhi, 2006.

9. H. C. Ray Chaudhuri, Political History of Ancient India, Rev. ed.

10. K. A. Nilakanta Shastri, ed., History of South India, OUP, 1966.

11. Upinder Singh, A History of Ancient and Early Medieval India, 2008.

12. RomilaThapar, Early India from the Beginnings to 1300, London, 2002.

13. Irfan Habib,A People's History-Vol. -1,PreHistory,2001, ----Vol.-2,

14. Indus Civilization: Including Other Copper Age Cultures and the History of Language Change till 155 B.C., 2002

15. Uma Chakravarti, Suggested Readings, The Social Dimensions of Early Buddhism. 1997.

16. Rajan Gurukkal, Social Formations of Early South India, 2010.

17. R. Champaka Lakshmi, Trade. Ideology and urbanization: South India 300 BC- AD 1300, 1996.

18. Rajesh Kochhar, The Vedic People : Their History and Geography, 2000

19. R.C. Majumdar (Ed) The History and Culture of Indian people 1-3 vols (Bharatiya Vidhya Bhavan), 1951.

SECOND SEMESTER-BA

PAPER-2 EARLY MEDIEVAL INDIA 300-1200 CE

UNIT-1

Rise of Gupta empire- Allahabad Prashasthi- Samudragupta- Chandragupta II – Hun Invasion- Decline of the Guptas- Administration- Economy- Agriculture and Land grants- Trade-Feudalism.

The Cultural contributions of Guptas- Development of Science & technology- Literature- Religion- Art

Vardhanas- Harsha Vardhana- Buddhism- Huen Tsang- Education system

UNIT-2

Chalukyas & Pallavas

Rise of Chalukyas- Pulikeshi II- Battle of Narmada- Interface with the Pallavas- Mahendra Varman.

Pallava Narasimhaha Varman.

Chalukyan Art- Pallava Art Religion- Alwars & Nayanmars

UNIT-3

Rastrakutas & their contributions- Art & Literature

Pala and Pratiharas.- Rajputs- Contributions to Art

UNIT-4

The Chola period- Raja Raja I- Rajendra Chola- Administration- Local self government- Economy- Art & Architeture- Chola Bronzes.

UNIT-5

Political Ascendency- Arab Conquest of Sindh- Arab Trade- Invasions of Muhammad of Ghazni and Muhammad of Ghori- Political Significance

MAP WORK

1. Extent of Guptha Empire under Samudra Gupta
2. Extent of Empire under Pulikeshi II
3. Extent of Raja Raja Chola Empire

PLACES OF HISTORICAL IMPORTANCE:

1. Prayag 2.Kanuj 3. Thaneswar 4.Kanchipuram 5. Mahabalipuram 6. Tanjavore 7. Gangaikondacholapuram 8. Aihole 9. Badami 10. Pattadakal 11. Ellora 12. Ajantha 13. Elephanta 14. Manyakheta 15. Somanatha 16. Delhi 17. Uttaramerur 18. Agra 19.Mewar 20. Tarain.

REFERENCE WORKS:

1. Chakrabarti, Ranabir, Trade and Traders in Early India Manohar,2002

2. Champaka Lakshmi, R., Trade, Ideology and Urbanization,OUP,1996

3. Chattopadhyaya, B.D., Aspects of Rural Settlements and Rural Society in Early Medieval India,OUP,2005

4. Chattopadhyaya, B.D., The Making of Early Medieval India.

5. K.P Baghchgi and co. 1995.

6. Deyell, J., Living without Silver,CUP,1982

7. Huntington, S., The Art of Ancient India: Buddhist, Hindu, Jain,Weatherhill,2006

8. Jaiswal, S., Caste: Origin, Function and Dimentions of Change, Manohar Publishers,1998

9. Kane, P.V., History of Dharmasastra (relevant volumes).

10. Kulke, H., The State in India, 1000-1700, OUP,1995

11. Nandi, R.N., State Formation, Agrarian Growth and Social Change in Feudal South India.

12. Nath, Vijay, Puranas and Acculturation, Munshiram Manoharlal,2001

13. Rangachari, D., Invisible Women, Visible Histories, Manohar Publishers,2009

14. Sahu, B.P., ed., Land System and Rural Society in Early medieval India.

15. Shah, S., Love, Eroticism and Female Sexuality in Classical Sanskrit Literature Manohar,2009

16. Sharma, R.S. and K.M.Shrimali, eds., The Comprehensive History of India, vol. IV (2), People's Publishing House,1992

17. Sharma, R.S., Early Medieval Indian Society: A Study in Feudalisation, Orient Longman,2003

18. Sharma, R.S., Urban Decay in India AD 300-1000., Munshiram Manoharlal,1987

19. Talbot, C., Precolonial India in Practice,OUP,2001.

19A. Thapar, Romila, Cultural Pasts,OUP,2003

20. Veluthat, Kesavan, Political Structure of Early Medieval South India,Orient Longman,1993

21. Veluthat, Kesavan, The Early Medieval in South India,OUP,2008.

THIRD SEMESTER-BA

PAPER-3 MEDIEVAL INDIA-1206-1707 CE

UNIT-1

Struggle for establishment of the Sultanate Power-Ultamush-Razia Sulthana-Balban- North West Frontier problem-Eastward expansion-Consolidation of the Sultanate.

UNIT-2

Khiljis and Tuglaqs- expansion of political power under Sultanate, Alla-ud-din Khilji- internal reforms- agrarian policy- market regulation-Muhammud Bin Tuglaq and his experiments-Feroz Shah Tughlaq and disintegration of Delhi sultanate.

UNIT-3

Economy and society - Bhakti movement- Sufism-Central administration- provincial administration-Art and Architecture

UNIT-4

The Afghan Mughal conflict for supremacy- Babar-Battle of Panipat- Battle of Kanwa-Humayun and his struggle for supremacy-Sur interregnum-Akbar and his consolidation of Mughal empire, Rajput policy- religious policy- revenue policy , Mansabdari system, Aurangzeb and his Deccan policy-Mughal architecture, society, social stratification- Shivaji - consolidation of Marathas.

UNIT-5

The Vijayanagara- Foundation-Devaraya II- Expansion of the empire under Krishnadevaraya, Ramaraya and Battle of Talikota, Nayankara system, administration, socio economic conditions, Art and Architecture. Literature, Bahamani's conflict and consolidation, contribution of Bahamanis and Adil Shahis to Art and Architecture.

Bahamani's conflict and consolidation, contribution of Bahamanis and Adil Shahis to Art and Architecture-

MAP WORK

1. Malik Kafur's Conquest
2. Extent of the Empire of Akbar
3. Vijayanagara Empire under Krishnadevaraya

PLACES OF HISTORICAL IMPORTANCE

1.Delhi, 2.Daulatabad, 3.Dwarasamudra, 4.Warrangal, 5.Madurai, 6.Panipat, 7.Agra, 8.Fathepur Sikri, 9.Sasaram, 10.Kanwa, 11.Ranathambore, 12.Malwa, 13.Poona, 14.Surath, 15.Shivanerudurga, 16.Hampi, 17.Talikota, 18.Bijapur, 19.Bidar, 20.Nalanda

REFERENCE WORKS

1. B. D. Chattopadhyaya, The Making of Early Medieval India, 1994.
2. D. P. Chattopadhyaya, History of Science and Technology in Ancient India, 1986.
3. D. D. Kosambi, An Introduction to the Study of Indian History, 1975.
4. S. K. Maity, Economic Life in Northern India in the Gupta Period, 1970.
5. B. P. Sahu (ed), Land System and Rural Society in Early India, 1997.
6. K. A. N. Sastri, A History of South India. R. S. Sharma, Indian Feudalism, 1980.
7. R.S.Sharma,Urban Decay in India,c.300- C1000,Delhi,Munshiram Manohar Lal,1987
8. RomilaThapar, Asoka and the Decline of the Mauryas, 1997.
9. Susan Huntington, The Art of Ancient India: Buddhist, Hindu, and Jain, New York, 1985.
10. N. N. Bhattacharya, Ancient Indian Rituals and Their Social Contents, 2nd ed., 1996.
11. J. C. Harle, The Art and Architecture of the Indian Subcontinent, 1987.
12. P. L. Gupta, Coins, 4th ed., 1996.
13. KesavanVeluthat, The Early Medieval in South India, New Delhi, 2009
14. H. P. Ray Winds of Change, 1994.
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22. Irfan Habib, Medieval India: The Study of a Civilization.

23. RomilaThapar, Somanatha: The Many Voices of a History.

24. John S. Deyell, Living Without Silver: The Monetary History of Early Medieval North India.

25. Vijaya Ramaswamy, Walking Naked: Women, Society, and Spirituality in South India.

26. Burton Stein, Peasant State and Society in Medieval South India.

27. R. Champaka Lakshmi, Trade, Ideology and Urbanization: South India, 300 BC to 1300 AD.

FOURTH SEMESTER-BA

PAPER-4 MODERN INDIAN HISTORY

UNIT-1

Forms of Dominance-Early phase-The Portuguese-The Dutch-The French-Mercantilism-Struggle for supremacy-Production of knowledge-Orientalists-Utilitarians-Anglicists-Establishment of the British political power-Robert Clive-Carnatic wars-Battle of Plassey and Buxur

UNIT-2

Evolution of British Governance and Control-British army-Police-Civil service-Judiciary-Transport and communication-Economic policies-Revenue policies.

UNIT-3

Indian renaissance-Western education-Socio-religious reform movement-1857 Event-Queen's Proclamation and its significance- Restructuring the British administration under the Crown.

UNIT-4

Constitutional Development -Consolidation of the British power-Regulating Act1773-Pitt's India Act1783-Indian council's act-1861-Birth of Indian National Congress-Different phases-Indian Council's Act-1892-Minto-Morley reforms Act 1909-Indian Councils Act 1919-Government of India Act 1935.

UNIT-5

Gandhian Era-Tools of protest-Non-co-operation-Civil disobedience-Gandhi- Ambedkar debate-Discourse on empowerment of subalterns-Dr.B.R.Ambedkar-Early experiments-constitutional method-Labour Movements-II World war-Quit India movement-Netaji-Forward Block-War time negotiations-Cripps Mission-Cabinet mission-Lord Mountbatten plan-India's Independence.

MAP WORK

1. Portuguese trade settlements
2. French settlements in India.
3. Important places of 1857 event.

PLACES OF HISTORICAL IMPORTANCE

1.Goa 2.Pondicherry 3.Mahe 4.Calcutta 5.Poona 6.Meerat 7.Jhansi 8.Delhi 9.Amrutsar 10.Simla 11.Madras 12.Pudukottai 13.Warrangal 14.Hyderabad 15.Vaikom 16.Belgaum 17.Wardha 18.Ahmedabad 19.Nagpur 20.Dandi.

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22. Paul Brass, The Politics of India Since Independence, OUP, 1990.

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29. Jawaharlal Nehru, An Autobiography.

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31. Sumit Sarkar, Modern India, 1885-1947.

32. Anil Seal, Emergence of Indian Nationalism.

33. Eleanor Zelliot, From Untouchable to Dalit: Essays on the Ambedkar Movement.

FIFTH SEMESTER-B.A

PAPER 5.1 MODERN EUROPE TO 1945 C E (Compulsory paper)

UNIT-1

Geographical discoveries-Discovery of new world-Renaissance-Impact-Reformation-Counter reformation.

UNIT-2

Transformation of Europe as a colonial power-Industrial revolution-Impact-Expansion of European Colonial power-Africa-South East Asia.

UNIT-3

French revolution- Causes- National Assembly- National Convention- Results-Rise of Napoleon-Domestic reforms- Continental system-Congress of Vienna- Metternich- Revolution of 1830 and 1848- Marxian socialism

UNIT-4

Nationalism and Unification-Unification of Italian associations-Mazzini –Garibaldi- Cavour-Victor Emanuel II-Unification of Germany- Bismarck- Three wars and the birth of German empire-Russian Revolution-Causes and impact.

UNIT-5

I World war- Causes- Paris Peace conference and League of Nations- Failure- Rise of Dictatorship-Hitler- Mussolini- II World war –United Nations Organization and aftermath.

MAP WORK

1. Centers of Industrial Revolution and French Revolution
2. Unification Movements- Italy and Germany
3. The Centers connected to World Wars I and II

PLACES OF HISTORICAL IMPORTANCE

1. Frankfort 2. Rome 3. Turin 4. Naples 5.Milon 6. Leningrad 7. Paris 8. Burlin 9. Dunkirk 10. Vienna 11. Waterloo 12.Versailles 13. Leipzig 14. Moscow 15. London 16. Piedmont 17. Petersburg 18. Yalta 19. Potsdam 20.Munich

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2. C.M. Cipolla: Fontana Economic History of Europe, Volume III: The Industrial Revolution.
3. Norman Davies, Europe. J. Evans: The Foundations of a Modern State in 19th Century Europe.
4. T.S. Hamerow: Restoration, Revolution and Reaction: Economics and Politics in Germany [1815 - 1871].
5. E.J. Hobsbawn: The Age of Revolution.
6. Lynn Hunt: Politics, Culture and Class in the French Revolution.
7. James Joll, Europe Since 1870.
8. David Landes: Prometheus Unbound.
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18. M. Perrot and G. Duby [eds.]: A History of Women in the West, Volumes 4 and 5.

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34. Dorothy Thompson: Chartists: Popular Politics in the Industrial Revolution.

35. E.P. Thompson: Making of the English Working Class.

5.2- HISTORY OF KARNATAKA UPTO 1956 (optional paper)

UNIT-1

State formation in Karnataka –Mauryan period- Satavahana- Kadambas- Gangas - Ratrakutas – Chalukyas - Rashtrakutas-Hoysalas – Vijayanagara– Bahamans- Adilshahis- Minor dynastics.

UNIT-2

Society – Economy-Social structure – Land grants – Agraharas – Agravian economy and trade – Ayyahole-500 - Socio-Cultural synthesis- Revenue administration – Art & Architecture-Shivappanayakana sisthu.

UNIT-3

Cultural revolution –Vachana Movement – Dasa movement – Sufism

UNIT-4

Entry of the British Colonial power-Hyderali & TipuSultan – Tipu's Economic reforms-Restoration of erstwhile Mysore State-Commissioners' rule-Rendition (1881)-Chamaraja Wodeyar X- Krishnaraja Wodeyar IV- Mysore's integration into Indian Union-Governments upto 1956.

UNIT-5

Emergence of National Movement – Various phases -Unification Movement-Contemporary Issues - Border disputes-River-Water Disputes- Environmental protection movements - Backward class movement – Dalit movement – Peasant Movement

MAP WORK

1. Extent of the Chalukyan Empire under Pulakeshi-II
2. Rastrakuta Empire Under Amoghavarsha
3. Extent of Tipu's Empire.

PLACES OF HISTORICAL IMPORTANCE

1.Maski 2.Talagunda 3.Chandravalli 4.Kolara 5.Halmidi 6.Badami 7.Aihole 8.Halebeedu 9.Hampi 10.Keladi 11.Basavakalyana 12.Bidar 13. Srirangapatna 14.Devanahalli 15.Mysore 16.Halagali 17.Belagavi 18.Shivapura 19.Viduraswatha 20.Esuru

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2. K.R. Basavarju - History and Culture of Karnataka
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9. Keshvan Veluthat - State Formation in Sough India
10. S. Rajashekaran - Karnataka Architecture
11. Champaka Lakshmi - Urbanization in South India
12. R.R. Diwakar - Karnataka through the Ages
13. Shama Rao M. - History of Modern Mysore in two volumes
14. B.L. Rice - Mysore Gazetteer Volumes
15. Mugali R.S - The Heritage of Karnataka
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OR

PAPER-5.3 WOMEN IN INDIAN HISTORY (Optional paper)

UNIT-1

Meaning of the idea of 'Position of women'-Ancient India-Religious texts and Women-Marriage system -Polity and women-Representation of women's voice-Gargi-Maitreyi-Sita.

UNIT-2

Medieval times and women-Status of Hindu women-Islam and women-Political leaders among women-Muslim Personal Law-(Shariyat)-Sufism and women-Devadasi system

UNIT-3

Colonial times-Christian missions and women-Social reform movements and their approach to the problems of women-Savithri Bai Phoole-Women centric debates-Epicentres of Debates-Calcutta – Poona-Madras-Mysore-Sati- Widow remarriage Act-Infant and child marriages-Women in the freedom movement of India and Karnataka

UNIT-4

Indian Constitution and women-Dr.B.R.Ambedkar and paradigm shift-Property Rights for women-Legislative enactment related to Divorce-Political representation-Shabano Case and thereafter-Triple Talaq Debate.

UNIT-5

Post colonial debates- Euro centrism-Feminist theories-Gayathri Chakravarthy Spivak's 'Can the Subaltern Speak?' Latha Mani's arguments-Development discourse on women.

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SIXTH SEMESTER-B.A

PAPER 6.1 BANGALORE IN TIME AND SPACE (Compulsory paper)

UNIT -1

Introducing Bengaluru -Historical geography-Political divisions-Topography and natural resources-climate and seasons-flora and fauna-economic resources and social wealth-Pre History to Early Historical period

UNIT -2

Historical Period beginning - Demography and ethnic variety-Hindu-Muslim -Sikh-Buddhist-Jain - Christian Communities Social hierarchy and caste system-Social mobility-Changing demographic pattern.

UNIT -3

Towards a major Transition – Western Gangas, Nolambas, Cholas and Hoysalas

Vijayanagar-Yelahanka Nada Prabhus- Kempe Gowda- Social impact of new land settlement in the medieval period- Entry of colonialism - Trade and Commerce—Colonial interference- Hyder Ali, Tipu Sultan; Bangalore as seen by the foreigners- Buchanan, William Arthur.

UNIT -4

Towards Modern Bangalore: The Wodeyars-Diwans' Rule-handicrafts and small industries-Textile-silk-Lamps-rice-cutlery,etc.—Development of industries-communication and railways- Trade marts-commercial groups and professionals-urbanization-old and new towns-rise of the small town gentry-Synthesis of urban -rural culture.

UNIT -5

Religion and culture-Major cults-Festivals, Folk-culture-Christian Missionaries-Emergence of Community Associations- Development of Science & Information Technology-IISc Bangalore-Electronic City; IT Corridor; Impact of IT & Social changes-Environmental movements-Bangalore towards BBMP status.

MAP WORK

1. Boundary of Yalahanka Nada Prabhus
2. New Major Layouts of 20th Century Bengaluru
3. BBMP Boundary limits (Upto 2010)

PLACES OF HISTORICAL IMPORTANCE

1.Begur 2.Yalahanka 3.Ulsoor 4.Devanahalli Fort 5.Bangalore Tipu Palace 6. Maharaja palace 7. Gavigangadhareshwara Temple 8. Doddabasavanna Temple 9. Tawakal Masthan Darga 10.Kadumalleshwara Temple 11.St.Mary's Basilica 12.Andrew Church 13.Halasur Gurudwara 14.Shankaramatta 15.Rajabhavan 16.Attara Kacheri 17. Government Museum 18.Lalbagh 19.Vidhana soudha 20.IISc

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6.2 SELECT DEBATES IN INDIAN HISTORY (optional paper)

UNIT-1

Indian antiquity-Harappan Civilization-Ethnicity-Indus script-The Aryan origin-Invasion and migration-Arya-Dravida debate-varna-jati

UNIT-2

Emergence of Heterodox religions-Ashoka's policy of Dhamma-Decline of the Mauryan State.

UNIT-3

The Golden age concept-Feudalism-Asiatic mode of production-Oriental Despotism.

UNIT-4

Perceptions of Colonialism in India-English medium-Women centric debates-Forms of nationalim-Gandhi-Ambedkar debate on social justice

UNIT-5

Debates on Medium of Instruction-Communalism verses Secularism-Uniform Civil Code

MAP WORKS

1. Buddhist sites.

2. Mauryan empire.

3. Presidencies under the British

PLACES OF HISTORICAL IMPORTANCE

1.Harappa 2.Mohenjadaro 3.Lothal 4.Chanhu-daro 5.Sanchi 6.Bodh Gaya 7.Nalanda 8.Rumtek

9.Tawang 10.Taxila 11. Ujjaini 12.Maski 13.Pataliputra 14.Prayaga 15.Kalinga 16.Amaravati

17.Rajaghatta 18.Nasik 19.Poona 20.Delhi

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OR

6.3 BOOK REVIEW (Optional paper)

HIND SWARAJ - M K GANDHI

MYTH AND REALITY- D D KOSAMBI

INTRODUCTION TO INDIAN ART-ANANDA KENTISH COOMARASWAMY

ANNIHILATION OF CASTE -DR B R AMBEDKAR