The Committee constituted for preparation of Guidelines of B.Com Degree course has met thrice and recommended the following to be followed for V & VI Semesters

01. Prof. K.Rama Mohan Rao
HOD, Department of Commerce & Management Studies
Andhra University, Visakhapatnam

02. Dr.S.S.S.Durga Ganesh
Vice-Principal & Associate Professor
Dept. of Commerce
Mrs.A.V.N.College, Visakhapatnam

03. Dr.(Smt) A.Satyavathi
Senior Lecturer in Commerce
MR Degree College for women, Vizianagaram

Introduction

The project work is an integral part of the academic curriculum of B.Com. It is an initiative to bridge the gap between knowledge and its application through a series of interventions that will enable students of B.Com course to gain insights and exposure to the industry. The objective of conducting project work at the end of V & VI semester of the courses is

a) to provide an opportunity for students to apply theoretical concepts in real life situations at the work place
b) to sensitize students to the nuances of corporate culture and familiarize them with the corporate code of behavior
c) to enable students to manage resources, work under deadlines, identify and carry out specific goal oriented tasks; to sharpen domain knowledge and provide cross functional skills

Guidelines

The student will have to identify a project work in a business enterprise that matches the students' area of *Cluster Electives - I&II.* Students are expected to study the functioning of an organization, identify a problem area and provide suggestions to overcome the problems.

Modalities

a) The duration of the project work is equal to that period of respective semester as per the UG academic calendar circulated by Andhra University from time to time.

b) The Project guide should finalise the topics of their students to carry out the proposed project work and to identify the organization selected for study within 15 days of the commencement of the class work of that respective semester and the same should be sent to Andhra University in the format of students' data to mail id: **coe@auvsp.edu.in** (*The*

student data format should include the name of the student, hall ticket number, semester, topic, name of the organization selected for study and name of the Project Guide)

c) The Project Report of the *VI* semester should be a case study/survey oriented and the topics for *V & VI* semesters should not be the same.

d) The students should submit their Project Report before 15 days of the commencement of semester end theory examinations.

e) Students should submit hard and soft copies to the respective project guides. The hard copy shall be kept with respective college for adjudication purpose and the soft copy should be mailed to Andhra University for screening purpose. The soft copies are subject to plagiarism check for avoided copying.

f) Students are expected to take up the project work, such as finalization of topic and identifying the organization, review of literature, research methodology, sampling etc., and data collection before the commencement of first mid examination. Tabulation, analysis and draft project report may be completed before the second mid examination.

Project Guide

Project guide is a full time faculty member of that college. Maximum of twenty students can work under an internal guide. The students are expected to be in continuous interaction with the guide during the course of the project work. No two students of an institute shall work on the same problem in the same organization.

Evaluation

The project report has 100 marks consisting of 50 marks for project report and the remaining 50 marks for viva-voce examination. The minimum pass marks for project work is 50 marks out of 100 marks on an aggregate.

Viva-voce / Presentation

A viva-voce examination will be conducted at the respective institution as per the guidelines of AU where a student is expected to give a presentation of his/her work. The viva-voce examination will be conducted by the committee comprising of HOD, Project Guide and an External Examiner nominated by Andhra University.

Paper, Typing, Format

a) Bond paper (A4 size) should be used for the preparation of the project report. Typing should be done on one side of the paper with character font in size 12 of Times New Roman.
b) The layout should provide a margin of 1.50 inches on the left, 1.00 inches on the top, bottom and right.
c) Fresh paragraph should commence after five spaces. Double-spacing or One and half line spacing shall be provided throughout the report.

d) The page numbers should be indicated at the top-middle or bottom-middle of the each page.
e) Should not underline the heading/subheadings and should not put colons (:) in headings or subheadings.
f) The project report should be minimum of 50 pages.

Note:

1. Titles of a few Electives Streams are given for DSC- F (1F, 2F & 3F combined) at V Semester and the same titles are repeated for DSC – H (1H, 2H & 3H combined). Each Elective Stream consists of two theory papers and one project work for each semester. The total papers for V & VI semesters will be four theory papers and two projects works under each stream. A student has to select One Stream of Elective consisting of four theory papers and two projects (together for V & VI semesters). That means, the student will continue the same elective in the VI semester also.

2. The colleges have to implement original project work which may consist of field survey/internship/case study/practical training also for the third respective elective papers in V & VI semester.

3. Colleges offering B.Com computers course cannot offer Computer Applications as Cluster Electives - I& II.

(PROF. K.RAMAMOHANRAO)

(DR.S.S.S.DURGA GANESH)

A.P. State Council of Higher Education
Revised Common Framework of CBCS for B.Com (w.e.f.2015-16) in AP
B.Com - Semester –I

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam*	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Tel/Hindi/Urdu/Sans)	100	25	75	4	3
3.	Foundation Course -1	HVPE (Human Values & Professional Ethics)*	50	---	50	2	2
4.	Foundation Course- 2	Environmental Studies	50	---	50	2	2
5.	DSC 1 A	Fundamentals of Accounting-I	100	25	75	5	4
6.	DSC 2 A	Business Organization	100	25	75	5	4
7.	DSC 3 A	Business Economics-I	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

#The marks split between formal test and co-curricular activities may be decided by the University concerned
@ Syllabus size shall be in accordance with the No. of teaching hours.
*HVPE may be taught by Telugu teachers

B.Com - Semester – II

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Tel/Hindi/Urdu/Sans)	100	25	75	4	3
3.	Foundation Course -3	ICT-1 (Information & communication Technology)	50	---	50	2	2
4.	Foundation Course-4	Communication & Soft Skills-1	50	---	50	2	2
5.	DSC 1 B	Fundamentals of Accounting-II	100	25	75	5	4
6.	DSC 2 B	Business Environment	100	25	75	5	4
7.	DSC 3 B	Business Economics-II	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

B.Com- Semester – III

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Tel/Hindi/Urdu/Sans)	100	25	75	4	3
3.	Foundation Course- 5	ICT-2 (Information & communication Technology)	50	---	50	2	2
4.	Foundation Course- 6	Communication & Soft Skills-2	50	---	50	2	2
5.	DSC 1 C	Corporate Accounting	100	25	75	5	4
6.	DSC 2 C	Business Statistics	100	25	75	5	4
7.	DSC 3 C	Banking Theory & Practice	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

B.Com -Semester – IV

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	Foundation Course- 7	Communication & Soft Skills-3	50	---	50	2	2
2.	Foundation Course- 8	Analytical Skills*	50	---	50	2	2
3.	Foundation Course- 9	Entrepreneurship	50	---	50	2	2
4.	Foundation Course- 10	Leadership Education**	50	---	50	2	2
5.	DSC 1 D	Accounting for Service organizations	100	25	75	5	4
6.	DSC 2 D	Business Laws	100	25	75	5	4
7.	DSC 3 D	Income Tax	100	25	75	5	4
Total			**500**	**75**	**425**	**23**	**20**

* To be taught by Maths/Statistics Teachers (and partly by English teachers)
** To be taught by Telugu Teachers

Table-5: B.Com -Semester – V

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1	DSC 1 E	5.2 Cost Accounting	100	25	75	5	4
2.	DSC 2 E	5.3 Goods and Services Tax Fundamentals	100	25	75	5	4
3.	DSC 3 E	5.4 Commercial Geography	100	25	75	5	4

4.	Elective-DSC 1F/Inter-disp.	***Cluster Electives -1*** ***1. E-Commerce*** 5.5 e-Commerce 5.6Business Networks 5.7 **Project Work:** Working with Organizations on e-Commerce activities, viz., Amazon.com., Flipkart, etc. /Online Operations in Banks ***2. Retailing*** 5.5 Purchase Management 5.6 Stores Management 5.7 **Project Work:** Survey on Rural Producers/Retailing Practices (Kirana) ***3. Corporate Accounting*** 5.5 Accounting & Auditing Standards 5.6 Accounting for Government Entities 5.7 **Project Work:** Application of Accounting & Auditing Standards in Companies /Internship in Govt. Depts. (Treasury, Local Bodies, Public Utilities, Govt. Corporations, etc.) ***4. Security Market Operations*** 5.5 Financial Markets 5.6 Stock Market Operations 5.7 **Project Work:** Survey on Investment behaviour/Working with on Stock issues, Share transfers, Documentation, Commodity trading, Derivatives, etc. ***5. Banking & Financial Services*** 5.5 Central Banking 5.6 Rural and Farm Credit 5.7 **Project Work:** Rural Credit survey/Banking operations/Credit Appraisal ***6. Taxation*** 5.5Assessment of Tax: Individual, HUF and Partnership 5.6 Corporate Taxation 5.7 **Project Work:** Working on Tax Filing Procedures & Documentation with IT Dept/Auditor/Tax Consultant ***7. Insurance*** 5.5 Life Insurance 5.6 Non- Life Insurance 5.7 **Project Work:** Working with Insurance Companies/Development Officers/Agents on Policies & Documentation. ***8. Logistics & Supply Chain Management*** 5.5 Logistics Management - Surface	100	25	75	5	4
5.	Elective-DSC 2F /Inter-disp.		100	25	75	5	4
6.	Elective-DSC 3F/Inter-disp.		100	25	75	5	4

		5.6Logistics Management - Air and Sea 5.7**Project Work:** Internship in Transport Organizations/ Railways/Ports /Tour Operators (on Goods, Parcel and Courier Services) ***9. Advertising and Sales Promotion*** 5.5 Advertising and Media Planning 5.6 Brand Management 5.7 **Project Work:** Working with Advertising Agencies/ Survey in Business units **10. Computer Applications** 5.5 Database Management & Report Generator 5.6 Management Information system 5.7 Project Work: Working on Debase Applications & Report generations and Documentation / Designing MIS Systems in different types of business units.					
Total			**600**			**30**	**24**

Table-6: B.Com- Semester – VI

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	DSC 1 G	6.2 Marketing	100	25	75	5	4
2.	DSC 2 G	6.3 Auditing	100	25	75	5	4
3.	DSC 3 G	6.4 Management Accounting	100	25	75	5	4

4.	Elective-DSC 1 H/Inter-disp./Gen. Elec.	**Cluster Electives -2** ***1A. e-Commerce*** 6.5 e-Payments System 6.6 Social Media and e-Marketing 6.7 **Project Work:** Working with Organizations on Tele-marketing /e-Shopping Activities ***2A. Retailing*** 6.5 Agricultural & Rural Marketing 6.6 Warehouse Management 6.7 **Project Work:** Survey on Hawkers/ Working with Warehouses ***3A. Corporate Accounting*** 6.5 Financial Reporting 6.6 Emerging Areas in Accounting 6.7 **Project Work:** Financial Reporting practices in Companies/ Survey on Human Resource/ Environmental Accounting. *4A.* ***Security Market Operations*** 6.5 Derivatives Trading 6.6 Stock Market Regulatory Framework 6.7 **Project Work:** Internship in Stock Exchanges/ Mutual Funds /Working with Stock Brokers ***5A. Banking & Financial Services*** 6.5 Financial Services 6.6 Marketing of Financial Services 6.7 **Project Work:** Working with Financial Services Firms on Documentation for Sanction of Loans and financial Services **6A. Taxation** 6.5 Goods & Service Tax and Customs Act 6.6 Tax Planning and Management 6.7 **Project Work:** Internship on Tax Planning Practices in Business Units ***7A. Insurance*** 6.5 Marketing of Insurance Services 6.6 Insurance Regulatory Framework 6.7 **Project Work: S**urvey on Settlement of Claims and Customer Care ***8A. Logistics & Supply Chain Management*** 6.5 Supply Chain Management - Products 6.6 Supply Chain Management - Services	100	25	75	5	4
5.	Elective-DSC 2H/Inter-disp./ Gen. Elec.		100	25	75	5	4
6.	Elective-DSC 3H/Inter-disp./ Gen. Elec.		100	25	75	5	4

		6.7 **Project Work:** Internship with Freight Operators/ Supply Chain Management Practices in Business Units ***9A. Advertising and Sales Promotion*** 6.5 Sales Promotion 6.6 Direct Marketing 6.7 **Project work:** Survey with Customers/Sales Force/Middlemen **10A. Computer Applications** 6.5 e-Commerce Applications 6.6 Enterprise Resource Planning 6.7 Project Work: Working on the applications of ERP packages in Companies / Internship/Projects in e-Commerce Companies on the Design and Creation of websites.					
Total			**600**			**30**	**24**
Grand Total						**164**	**134**

Note:

*1. Titles of a few Electives Streams are given for DSC- F (1F, 2F & 3F combined) at V Semester and the same titles are repeated for DSC – H (1H, 2H & 3H combined). Each Elective Stream consists of two theory papers and one project work for each semester. The total for V & VI semesters will be four theory papers and two project works under each stream. A student has to select O**ne Stream of Elective consisting of four theory papers and two projects** (together for V & VI semesters). That means, the student will continue the same elective in the VI semester also.*

*2. The colleges have to **implement original project work** which may consist of field survey/internship/case study/practical training also for the third respective elective papers in V & VI semester.*

B.Com. Detailed Syllabi w.e.f. 2015-16

Semester - I

DSC 1A - Fundamentals of Accounting-I

Unit-I – Introduction to Accounting

Need for Accounting – Definition – Objectives, Advantages – Book keeping and Accounting–Accounting concepts and conventions - Accounting Cycle - Classification of Accounts and its rules - Double Entry Book-keeping - Journalization - Posting to Ledgers, Balancing of ledger Accounts (problems).

Unit –II: Subsidiary Books:

Types of Subsidiary Books - Cash Book, Three-column Cash Book- Petty cash Book (Problems).

Unit-III: Trail Balance and Rectification of Errors:

Preparation of Trail balance - Errors – Meaning – Types of Errors – Rectification of Errors (Problems)

Unit-IV- Bank Reconciliation Statement:

Need for bank reconciliation - Reasons for difference between Cash Book and Pass Book Balances- Preparation of Bank Reconciliation Statement- Problems on both favorable and unfavourable balances.

Unit -V: Final Accounts:

Preparation of Final Accounts: Trading account – Profit and Loss account – Balance Sheet – Final Accounts with adjustments (Problems).

Reference Books

1. T.S.Reddy & A. Murthy, Financial Accounting , Margham Publications
2. R L Gupta & V. K Gupta, Principles and Practice of Accounting, Sultan Chand & Sons
3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers
4. Tulasian, Accountancy -I, Tata McGraw Hill Co.
5. V.K.Goyal, Financial Accounting, Excel Books
6. K. Arunjothi, Fundamentals of Accounting; Maruthi Publications

DSC 2 A - Business Organization

Unit-I – Introduction
Concepts of Business, Trade , Industry and Commerce – Features of Business -Trade Classification - Aids to Trade – Industry – Classification – Relationship of Trade, Industry and Commerce.

Unit II- Business Functions and Entrepreneurship
Functions of Business and their relationship - Factors influencing the choice of suitable form of organization – Meaning of Entrepreneurship – Characteristics of a good entrepreneur - Types – Functions of Entrepreneurship.

Unit –III – Forms of Business Organizations
Sole Proprietorship – Meaning – Characteristics – Advantages and Disadvantages – Partnership - Meaning – Characteristics- Kinds of partners – Advantages and Disadvantages – Partnership Deed – Hindu-undivided Family – Cooperative Societies.

Unit-IV- Joint Stock Company
Joint Stock Company – Meaning – Characteristics –Advantages – Kinds of Companies - Differences between Private Ltd and Public Ltd Companies.

Unit-V- Company Incorporation
Preparation of important Documents for incorporation of Company – Memorandum of Association – Articles of Association – Differences Between Memorandum of Association and Articles of Association - Prospectus and its contents.

Reference Books

1. C.D.Balaji and G. Prasad, Business Organization - Margham Publications, Chennai.
2. R.K.Sharma and Shashi K Gupta, Business Organization - Kalyani Publications.
3. C.B.Guptha, Industrial Organization and Management, Sultan Chand.
4. Y.K.Bushan, Business organization and Management, Sultan Chand.
5. Sherlekar, Business Organization and Management, Himalaya Publications.

DSC 3A - Business Economics-I

Unit-I- Introduction
Meaning and Definitions of Business Economics - Nature and scope of Business Economics- Micro and Macro Economics and their differences.

Unit-II- Demand Analysis
Meaning and Definition of Demand - Determinants of Demand -- Demand function – Law of demand- Demand Curve - Exceptions to Law of Demand.

Unit –III- Elasticity of Demand
Meaning and Definition of Elasticity of Demand – Types of Elasticity of Demand – Measurements of Price elasticity of demand – Total outlay Method – Point Method – Arc Method.

Unit – IV- Cost and Revenue Analysis
Classification of Costs – Total - Average – Marginal and Cost function – Long-run – Short-run – Total Revenue - Average revenue – Marginal Revenue.

Unit-V- Break-Even Analysis
Type of Costs – Fixed Cost – Semi-variable Cost – Variable Cost– Cost behaviour - Breakeven Analysis - Its Uses and limitations.

Reference Books

1. S.Sankaran, Business Economics, Margham Publications, Chennai.
2. Business Economics - Kalyani Publications.
3. Business Economics – Himalaya Publishing House.
4. Aryasri and Murthy Business Economics , Tata McGraw Hill.
5. Business Economics, Maruthi Publications.

Semester - II

DSC 1B – Fundamentals of Accounting-II

Unit-I: **Depreciation**
Meaning of Depreciation - Methods of Depreciation: Straight line – Written down Value – Sum of the Years' Digits - Annuity and Depletion (Problems).

Unit-II: **Provisions and Reserves**

Meaning – Provision vs. Reserve – Preparation of Bad debts Account – Provision for Bad and doubtful debts – Provision for Discount on Debtors – Provision for discount on creditors - Repairs and Renewals Reserve A/c (Problems).

Unit-III: Bills of Exchange
Meaning of Bill –Features of bill – Parties in the Bill – Discounting of Bill – Renewal of Bill – Entries in the books of Drawer and Drawee (Problems).

Unit-IV: **Consignment Accounts**
Consignment - Features - Proforma invoice - Account sales – Del-credre Commission - Accounting treatment in the books of consigner and consignee - Valuation of closing stock - Normal and Abnormal losses (Problems).

Unit-V: **Joint Venture Accounts**
Joint venture - Features - Differences between Joint-venture and consignment – Accounting procedure - Methods of keeping records (Problems).

Reference Books:

1. R.L. Gupta & V.K. Gupta, Principles and Practice of Accounting, Sultan Chand
2. T. S. Reddy and A. Murthy - Financial Accounting, Margham Publications.
3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers.
4. Tulsan, Accountancy-I, Tata McGraw Hill Co.
5. V.K. Goyal, Financial Accounting, Excel Books
6. T.S. Grewal, Introduction to Accountancy, Sultan Chand & Co.
7. Haneef and Mukherjee, Accountancy-I, Tata McGraw Hill
8. Arulanandam, Advanced Accountancy, Himalaya Publishers
9. S.N.Maheshwari & V.L.Maheswari, Advanced Accountancy-I, Vikas Publishers.

DSC 2 B: Business Environment

Unit – I: Overview of Business Environment
Business Environment – Meaning – Macro and Micro Dimensions of Business Environment – Economic – Political – Social – Technological – Legal – Ecological – Cultural – Demographic – Changing Scenario and implications – Indian Perspective – Global perspective.

Unit – II: Economic Growth
Meaning of Economic growth – Factors Influencing Development – Balanced Regional Development.

Unit – III - Development and Planning
Rostow's stages of economic development - Meaning – Types of plans – Main objects of planning in India – NITI Ayog and National Development Council – Five year plans.

Unit – IV : Economic Policies
Economic Reforms and New Economic Policy – New Industrial Policy – Competition Law – Fiscal Policy – Objectives and Limitations – Union budget – Structure and importance of Union budget – Monetary policy and RBI.

Unit – V -Social, Political and Legal Environment
Concept of Social Justice - Schemes - Political Stability - Leal Changes.

Suggested Readings:

1. Rosy Joshi and Sangam Kapoor : Business Environment.
2. Francis Cherunilam : Business Environment.
3. S.K. Mishra and V.K. Puri : Economic Environment of Business.
4. K. Aswathappa : Essentials of Business Environment.

DSC 3 B - Business Economics-II

Unit-I: Production and Costs: Techniques of Maximization of output, Minimization of costs and Maximization of profit - Scale of production - Economies and Dis-economies of Scale - Costs of Production – Cobb-Douglas Production Function.

Unit-II: Market Structure-I: Concept of Market - Market structure - Characteristics - Perfect competition -characteristics equilibrium price - profit maximizing output in the short and long run Monopoly- characteristics - Profit maximizing out-put in the short and long run - Defects of Monopoly – Distinction between Perfect competition and Monopoly.

Unit-III Market Structure-II: Monopolistic Competition - Characteristics - Product differentiation - Profit maximization - Price and output in the short and long - run – Oligopoly - characteristics - Price rigidity - Kinked Demand Curve - Distribution - Concepts - Marginal Productivity - Theory of Distribution.

Unit-IV National Income And Economic Systems: National Income - Definition Measurement - GDP - Meaning Fiscal deficit - Economic systems - Socialism - Mixed Economic System - Free Market economy.

Unit-V Structural Reforms: Concepts of Economic liberalization, Privatization, Globalization -WTO Objectives Agreements - Functions - Trade cycles - Meaning - Phases - Benefits of International Trade - Balance of Trade and Balance of payments.

Reference Books:

1. Aryasri and Murthy, Business Economics, Tata McGraw Hill
2. H.L Ahuja, Business Economics, Sultan Chand & Sons
3. KPM Sundaram, Micro Economics
4. Mankiw, Principles of Economics, Cengage Publications
5. Mithani, Fundamentals of Business Economics, Himalaya Publishing House
6. DAR Subrahmanyam &V Hari Leela, A Text Book on Business Economics, Maruthi Publishers.
7. A.V. R. Chary, Business Economics, Kalyani Publishers, Hyderabad.

Semester - III

DSC 1 C - Corporate Accounting

Unit-I:
Accounting for Share Capital - Issue, forfeiture and reissue of forfeited shares- concept & process of book building - Issue of rights and bonus shares - Buyback of shares (preparation of Journal and Ledger).

Unit-II:
Issue and Redemption of Debentures - Employee Stock Options – Accounting Treatment for Convertible and Non-Convertible debentures (preparation of Journal and Ledger).

Unit –III:
Valuation of Goodwill and Shares: Need and methods - Normal Profit Method, Super Profits Method – Capitalization Method - Valuation of shares - Need for Valuation - Methods of Valuation - Net assets method, Yield basis method, Fair value method (including problems).

UNIT – IV:

Company Final Accounts: Preparation of Final Accounts – Adjustments relating to preparation of final accounts – Profit and loss account and balance sheet – Preparation of final accounts using computers (including problems).

Unit –V

Provisions of the Companies Act, 2013 relating to issues of shares and debentures - Book Building- Preparation of Balance Sheet and Profit and Loss Account – Schedule-III.

Reference Books:

1. Corporate Accounting – Haneef & Mukherji,
2. Corporate Accounting – RL Gupta & Radha swami
3. Corporate Accounting – P.C. Tulsian
4. Advanced Accountancy: Jain and Narang
5. Advanced Accountancy : R.L. Gupta and M.Radhaswamy, S Chand.
6. Advanced Accountancy : Chakraborthy
7. Modern Accounting: A. Mukherjee, M. Hanife Volume-II McGraw Hill
8. Accounting standards and Corporate Accounting Practices: T.P. Ghosh Taxman
9. Corporate Accounting: S.N. Maheswari, S.R. Maheswari, Vikas Publishing House.
10. Advanced Accountancy: Arutanandam, Raman, Himalaya Publishing House.
11. Advanced Accounts: M.C. Shukla, T.S. Grewal, S.C. Gupta, S. Chand & Company Ltd.,
12. Management Accounting: Shashi K. Gupta, R.K. Sharma, Kalyani Publishers.

DSC 2C - Business Statistics

Unit 1: Introduction to Statistics:

Definition, importance and limitations of statistics - Collection of data - Schedule and questionnaire – Frequency distribution – Tabulation -Diagrammatic and graphic presentation of data using Computers (Excel).

Unit 2: Measures of Central Tendency:

Characteristics of measures of Central Tendency-Types of Averages – Arithmetic Mean, Geometric Mean, Harmonic Mean, Median, Mode, Deciles, Percentiles, Properties of averages and their applications.

Unit 3: Measures of dispersion and Skewness:

Properties of dispersion-Range-Quartile Deviation –Mean Deviation-Standard Deviation-Coefficient of Variation-Skewness definition-Karl Pearson's and Bowley's Measures of skewness-Normal Distribution.

Unit 4: Measures of Relation:
Meaning and use of correlation – Types of correlation-Karlpearson's correlation coefficient – Spearman's Rank correlation-probable error-Calculation of Correlation by Using Computers.
Regression analysis comparison between correlation and Regression – Regression Equations-Interpretation of Regression Co-efficient.

Unit 5: Analysis of Time Series & Index Numbers:
Components of Time series- Measurement of trend and Seasonal Variations – Index Numbers-Methods of Construction of Index Numbers – Price Index Numbers – Quantity Index Numbers –Tests of Adequacy of Index Numbers – Cost of Index Numbers-Limitations of Index Numbers – Use of Computer Software.

Suggested Readings:

1. Business Statistics	Reddy, C.R Deep Publications.
2. Statistics-Problems and Solutions	Kapoor V.K.
3. Fundamentals of Statistics	Elhance.D.N
4. Statistical Methods	Gupta S.P
5. Statistics	Gupta B.N.
6. Fundamentals of Statistics	Gupta S.C
7. Statistics-Theory, Methods and Applications	Sancheti,D.C. &Kapoor V.K
8. Business Statistics	J.K.Sharma
9. Business Statistics	Bharat Jhunjhunwala
10. Business Statistics	R.S.Bharadwaj

DSC 3C - Banking Theory & Practice

Unit-I: Introduction
Meaning & Definition of Bank – Functions of Commercial Banks – Kinds of Banks - Central Banking Vs. Commercial Banking.

Unit-II: Banking Systems
Unit Banking , Branch Banking, Investment Banking- Innovations in banking – E banking - Online and Offshore Banking , Internet Banking - Anywhere Banking - ATMs - RTGS.

Unit-III: Banking Development
Indigenous Banking - Cooperative Banks, Regional Rural banks, SIDBI, NABARD - EXIM Bank.

Unit-IV: Banker and Customer
Meaning and Definition of Banker and customer – Types of Customers - General Relationship and Special Relationship between Banker and Customer - KYC Norms.

Unit-V: Collecting Banker and Paying Banker

Concepts - Duties & Responsibilities of Collecting Banker – Holder for Value – Holder in Due Course – Statutory Protection to Collecting Banker - Responsibilities of Paying Banker - Payment Gateways.

Books for Reference

1. Banking Theory: Law & Practice : K P M Sundram and V L Varsheney
2. Banking Theory, Law and Practice : B. Santhanam; Margam Publications
3. Banking and Financial Systems : Aryasri
4. .Introduction to Banking : Vijaya Raghavan
5. Indian Financial System : M.Y.Khan
6. Indian Financial System : Murthy & Venugopal

Semester - IV

DSC 1D- Accounting for Service Organizations

Unit-I: Non-Trading/ Service Organizations:

Concept - Types of Service Organizations – Section (8) and other Provisions of Companies Act, 2013.

Unit – II Electricity Supply Companies:

Accounts of Electricity supply companies: Double Accounting system – Revenue Account – Net Revenue Account – Capital Account – General Balance Sheet (including problems).

Unit – III - Bank Accounts

Bank Accounts – Books and Registers to be maintained by Banks – Banking Regulation Act, 1969 - Legal Provisions Relating to preparation of Final Accounts (including problems).

Unit-IV: Insurance Companies

Life Insurance Companies –Preparation of Revenue Account, Profit and Loss Account, Balance Sheet (including problems) – LIC Act, 1956.

Unit – V: General Insurance

Principles – Preparation of final accounts – with special reference to fire and marine insurance (including problems) – GIC Act, 1972.

Suggested Readings

1. Corporate Accounting – RL Gupta & M. Radha Swami
2. Corporate Accounting – P.C. Tulsian
3. Company Accounts : Monga, Girish Ahuja and Shok Sehagal
4. Advanced Accountancy: Jain and Narang
5. Advanced Accountancy : R.K. Gupta and M. Radhaswamy
6. Advanced Accountancy : Chakraborty
7. Advanced Accountancy: S.P. Iyengar
8. Modern Accounting: A. Mukherjee, M. Hanife McGraw Hill Company Ltd., New Delhi.
9. Accounting standards and Corporate Accounting Practices: T.P. Ghosh Taxman
10. Corporate Accounting: S.N. Maheswari, S.R. Maheswari, Vikas Publishing.
11. Advanced Accountancy: Arutanandam, Raman, Himalaya Publishing House.
12. Advanced Accounts: M.C. Shukla, T.S. Grewal, S.C. Gupta, S. Chand.

DSC 2D - Business Laws

Unit-1 Contract

Meaning and Definition of Contract-Essential elements of valid Contract -Valid, Void and Voidable Contracts - Indian Contract Act, 1872.

Unit-2 Offer and Acceptance

Definition of Valid Offer, Acceptance and Consideration -Essential elements of a Valid Offer, Acceptance and Consideration.

Unit-3 Capacity of the Parties and Contingent Contract

Rules regarding to Minors contracts - Rules relating to contingent contracts - Different modes of discharge of contracts-Rules relating to remedies to breach of contract.

Unit-4 Sale of Goods Act 1930

Contract of sale – Sale and agreement to sell – Implied conditions and warranties – Rights of unpaid vendor.

Unit-5:

Cyber Law and Contract Procedures - Digital Signature - Safety Mechanisms.

Suggested Readings:

1. J. Jayasankar, Business Laws, Margham Publication. Chennai -17
2. Kapoor ND, Mercentile Law , Sultan Chand
3. Balachandram V, Business law Tata
4. Tulsian , Business Law Tata
5. Pillai Bhagavathi, Business Law , S.Chand.
6. Business Laws, Maruthi Publishers

DSC 3D - Income Tax

Unit-I

Introduction: Income Tax Law – Basic concepts: Income, Person, Assesse, Assessment year, Agricultural Income, Capital and revenue, Residential status, Income exempt from tax (theory only).

Unit-II

Income from salary: Allowances, perquisites, profits in lieu of salary, deductions from salary income, computation of salary income and qualified savings eligible for deduction u/s 80C (including problems).

Unit-III

Income from House Property: Annual value, let-out/self occupied/deemed to be let-out house, deductions from annual value - computation of income from house property (including problems).

Unit-IV

Income from Capital Gains – Income from other sources – (from Individual point of view) - chargeability – and assessment (including problems).

Unit-V:

Computation of total income of an individual – Deductions under section - 80 (including problems).

Reference Books:

1. Dr. Vinod; K. Singhania; Direct Taxes – Law and Practice, Taxman Publications
2. B.B. Lal; Direct Taxes; Konark Publications
3. Dr. Mehrotra and Dr. Goyal; Direct Taxes – Law and Practice; Sahitya Bhavan Publication.
4. Gaur and Narang; Income Tax, Kalyani Publishers, New Delhi.

Semester - V

DSC - 1E 5.2 Cost Accounting

Unit-I:Introduction: Distinguish between Financial Accounting, Cost Accounting and management accounting - Cost Concepts and Classification – Cost Centre and Cost Unit – Preparation of Cost Sheet.

Unit-II: Elements of Cost: Materials: Material control – Selective control, ABC technique – Methods of pricing issues – FIFO, LIFO, Weighted average, Base stock methods, choice of method (including problems).

Unit-III: Labour and Overheads: Labour: Control of labor costs – time keeping and time booking – Idle time –Methods of remuneration – labour incentives schemes - Overheads: Allocation and apportionment of overheads – Machine hour rate.

Unit-IV: Methods of Costing: Job costing – Process costing - treatment of normal and abnormal process losses – preparation of process cost accounts – treatment of waste and scrap, joint products and by products (including problems).

Unit -V: Costing Techniques: Marginal Costing – Standard costing – Variance Analysis (including problems).

References:

1. S.P. Jain and K.L. Narang – Advanced Cost Accounting, Kalyani Publishers, Ludhiana.
2. M.N. Aurora – A test book of Cost Accounting, Vikas Publishing House Pvt. Ltd.
3. S.P. Iyengar – Cost Accounting, Sultan Chand & Sons.
4. Nigam & Sharma – Cost Accounting Principles and Applications, S.Chand & Sons.
5. S.N .Maheswari – Principles of Management Accounting.
6. I.M .Pandey – Management Accounting, Vikas Publishing House Pvt. Ltd.
7. Sharma & Shashi Gupta – Management Accounting, Kalyani Publishers. Ludhiana.

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B.Com. CBCS SYLLABUS

V-Semester
DSC: 2E: GOODS &SERVICE TAX FUNDAMENTALS

Unit I:Introduction: Overview of GST - Concepts – Limitations of VAT – Need for Tax Reforms - Justification for introduction of GST - Shortcomings and advantages at the Central Level and State Level on introduction of GST- Process of Introduction of GST - Constitutional Amendments.

Unit II: **GST:**Principles – Models of GST: Austrlian, Candian, Kelkar-Shah – Bagchi-Poddar -Comprehensive structure of GST model in India: Single, Dual GST– Transactions covered under GST.

Unit-III:Taxes and Duties: Subsumed under GST - Taxes and Duties outside the purview of GST: Tax on items containing Alcohol – Tax on Petroleum products - Tax on Tobacco products - Taxation of Services

Unit-IV: **Inter-State Goods and Services Tax**: Major advantages of IGST Model – Interstate Goods and Service Tax: Transactions within a State under GST – Interstate Transactions under GST - Illustrations.

Unit-V: Time of Supply of Goods & Services: Value of Supply - Input Tax Credit – Distribution of Credit -Matching of Input Tax Credit - Availability of credit in special circumstances- Cross utilization of ITC between the Central GST and the State GST.

References:

1. Goods and Services Tax in India – Notifications on different dates.
2. GST Bill 2012.
3. Background Material on Model GST Law, Sahitya Bhawan Publications, Hospital Road, Agra - 282 003.
4. The Central Goods and Services Tax Act, 2017, NO. 12 OF 2017 Published by Authority, Ministry of Law and Justice, New Delhi, the 12thApril, 2017.

SECRETARY, APSCHE

Date: 8.6.2017

DSC 3E 5.4 Commercial Geography

Unit –I: The Earth: Internal structure of the Earth – Latitude – Longitude – Realms of the Earth – Evolution of the Earth – Environmental pollution - Global Warming - Measures to be taken to protect the Earth.

Unit -II: India – Agriculture: Land Use - Soils - Major crops – Food and Non-food Crops – Importance of Agriculture – Problems in Agriculture – Agriculture Development.

Unit -III: India – Forestry: Forests – Status of Forests in Andhra Pradesh – Forest (Conservation) Act, 1980 – Compensatory Afforestation Fund (CAF) Bill, 2015 - Forest Rights Act, 2006 and its Relevance – Need for protection of Forestry.

Unit -IV: India – Minerals and Mining: Minerals – Renewable and non Renewable – Use of Minerals – Mines – Coal, Barites, etc. – Singareni Coal mines and Mangampeta Barites - District-wise Profile.

Unit-V: India – Water Resources – Rivers: Water resources - Rationality and equitable use of water – Protection measures - Rivers **-** Perennial and peninsular Rivers - Interlinking of Rivers - Experience of India and Andhra Pradesh.

References:

1. Shabiar Ahmad; Quazi ,Natural Resource Consumption and Environment Management, APH Publishing Corporation.
2. Tarachand, Economic and Commercial Geography of India, Vikas Publishing House.
3. Dr. S. Sankaran, Commercial Geography, Margam Publications, Chennai.
4. C. B. Memoria, Commercial Geography, Lal Agarwal & Co.
5. C. B. Memoria, Economic and Commercial Geography, Lal Agarwal & Co.
6. Vinod N. Patel, Commercial Geography, Oxford Book Company

Cluster Elective -1: E-Commerce

DSC F 5.5 e-Commerce

Unit-I: e-Commerce: Features of Electronic Commerce - Distinction between e-Commerce and e-Business - Types of Business Models: B2B, B2C, C2C - Benefits and Limitations of e-Commerce - Apps.

Unit-II: **e-Business Applications:** Integration and e-Business suits - ERP, e-SCM, e-CRM - Methods and benefits of e-Payment Systems –e-Marketing – Applications and issues

Unit-III: **e-Business on different Fields**: e-Tourism – e-Recruitment – e- Real Estate – e-Stock Market – e-Music/Movies - e-Publishing and e-Books.

Unit-IV: **Concept of Online Education:** Process - Methods - e-Content development and Deliveries - Major technologies used in e-Education - Online Testing - Methods - Future Trends.

Unit-V: Mobile Commerce: Ticketing - Me-Seva; Government and Consumer Services – e-Retailing - e-Groceries – Security challenges - Case Studies.

References:

1. Turban E. Lee J., King D. and Chung H.M: Electronic commerce-a Managerial Perspective, Prentice-Hall International, Inc.
2. Bhatia V., E-commerce, Khanna Book Pub. Co. (P) Ltd., Delhi.
3. Daniel Amor, E Business R (Evolution), Pearson Education.
4. Krishnamurthy, E-Commerce Management, Vikas Publishing House.
5. David Whiteley, E-Commerce: Strategy, Technologies and Applications, Tata McGraw Hill.
6. P. T. Joseph, E-Commerce: A Managerial Perspectives, Tata McGraw Hill.

DSC F 5.6 Business Networks

Unit-I: Business Forms: Interrelation among Stakeholders – Business and Government – Business and Society: Social Network and Facebook.

Unit-II: Business Networking through ICT: Basic concepts – Uses and Application of Business Networks – Different Layers of Business Networks – Internet and Business Networks – Network Security.

Unit-III: Business Networking Systems and Devices: Communication Satellites – Servers – Cloud Computing – Sharing – Spectrum – Commercial issues.

Unit-IV: Customer Relationship Management: Establishing Network connection with customers – Forward and Backward Integration – Customer Data Base – Creation and Maintenance – Legal and Ethical Issues.

Unit-V: Business Analytics: Master Data Management – Data Warehousing and Mining – Data Integration – OLTP and OLAP.

References:

1. Jerry, FitzGerald and Alan Dennis, Business Data Communications and Networking, John Wiley & Sons.
2. Tanenbaum, A. S., Computer Networks, Pearson Education.
3. David A Stamper, Business Data Communications. Addison Wesley.
4. Business Analytics – Methods, Models and Decisions, James R. Evans, Prentice Hall.
5. Business Analytics - An Application Focus, Purba Halady Rao, PHI learning
6. R.N Prasad and Seema Acharya, Fundaments of Business Analytics, Wiley India.

5.7: Project work

Cluster Elective – 2: Retailing

DSC F 5.5 Purchase Management

Unit-I: Introduction: Purchase Function - Supply Management – Sources of Purchase: Local vs. Global - Negotiation & Bargaining - Purchasing Methods - e-Procurement –DGS & D.

Unit-II: **Purchasing Function**: Right Quantity - Economic Order Quantity - Re-order Levels - ABC Analysis - Right Price, Time - Tendering: Single, Limited, Open, Global tenders.

Unit-III: **Vendor Analysis**: Identification of vendor – Selection - Criteria and Methodology of evaluation - Vendor Rating – Maintenance of Vendor relations.

Unit-IV: **Buyer-Supplier Relationships**: Transformation of buyer-supplier relationships -Developing and managing collaborative and alliance relationships – joint problem solving, Information sharing.

Unit-V: Supply Chain Management: JIT in the supply management - Cross-Functional Teams: Cross-functional teams and supply management - challenges of cross-functional teams, prerequisites to success.

References:

1. Dobler & Burt, Purchasing and Supply Management, McGraw Hill.
2. P. Gopala Krishan, Purchasing and Materials Management, Tata McGraw-Hill Education.
3. L.N. Aggarwal & Parag Diwan, Management & Production Systems, National Publishing House.
4. N.G. Nair, Production and Operations Management, Tata McGraw Hill Publishing Co. Ltd.
5. Gopalakrishnan P. & Sundaresan. M., Materials Management-An Integrated Approach, PHI.

DSC F 5.6 Stores Management

Unit-I: Stores Function: Layout and Organization - Stores Responsibilities - Relationships with Other Departments - Logistics - Supply Chain - Coding of materials - Methods of Coding

Unit-II: Material Receipt and Issue: Receipts from Suppliers - Inspection - Authorization of issues - Methods of issue - Records and Systems **-** Manual Systems - Computerized Systems - Recent Developments.

Unit-III: Stock Control Techniques: Approaches to Control - ABC Analysis - Provision of Safety Stock - Stocktaking Procedure - Obsolescence and Redundancy - Prevention of Deterioration - Stock Checking.

Unit-IV: Stores Operations: Storehouse Location - Centralization of Storage - Measurement of Stores efficiency - Health and Safety directives on stores operations - Manual and Mechanical lifting - Control of Substances Hazardous to Health Regulations - Storage Equipment.

Unit-V: Procedure Manuals: Need for Manuals - Preparation of the Manual - Contents of the Manual - Publication and Distribution - Implementation of the Manuals.

References:

1. Jessop David & Morrison Alex, Storage and Supply of Materials, Pearson Education Ltd. England.

2. Saleemi N.A., Store keeping and Stock Control Simplified, Saleemi Publications Ltd., Nairobi.

3. Gopalakrishnan P. & Sundaresan. M., Materials Management-An Integrated Approach, PHI.

4. P. Gopala Krishan, Purchasing and Materials Management, Tata McGraw-Hill Education.

5.7: Project work

Cluster Elective-3: Corporate Accounting

DSC F 5.5 Accounting & Auditing Standards

Unit-I: Introduction: Significance of Accounting Standards - National and International Accounting Standards - Accounting Standards in India.

Unit-II: Accounting Standards (AS-1 to AS-16): AS-1: Disclosure of Accounting policies – AS-2: Valuation of inventories –AS-3: Cash flow statement – AS-4: Contingencies in balance sheet – AS-5: Net profit or loss, prior period items and changes – AS-6: Depreciation Accounting – AS-7: Construction Contracts – AS-9: Revenue Recognition – AS 10: Accounting for Fixed assets - AS-11: Effects of changes in foreign exchange rates- AS-12: Accounting for government grants – **AS-13: Accounting for investments** – AS-14: Accounting for Amalgamation – AS-15: Employee benefits – AS-16: Borrowing costs .

Unit-III: Accounting Standards (AS17 to AS-32): – AS-17: Segment reporting – AS-18: Related party disclosures – AS-19: Leases – AS-20: Earning per share - AS-21: Consolidated financial statements – AS-22: Accounting for taxes – AS-23: Accounting for investments – AS-24: Discontinuing operations – AS-25: Interim Financial Reporting – AS-26: Intangible assets – AS-27: Financial reporting of interests in joint ventures – AS-28: Impairment of assets – AS-29: Provisions, Contingent liabilities and assets; AS-30: Financial Instruments: Recognition and Measurement; AS-31: Financial Instruments: Presentation – AS-32:Financial Instruments: Disclosures.

Unit-IV: Auditing Standards: Procedure - International Federation of Accountants - Auditing and Assurance Standards Board - Indian Auditing Standards (issued so far) Overview.

Unit-V: International Financial Reporting Standards (IFRS): Origin - Procedure - International Accounting Standards Board - Adoption in India.

References:

1. Taxman's Students' Guide to Accounting Standards, D. S. Rawat, Taxman Publications.
2. Compendium of Statements and Standards on Accounting, The Institute of Chartered Accountants of India, New Delhi.
3. British Accounting Standards, Ronal Leach and Edward Stamp, Woodhead Faulkner Ltd, Cambridge.

4. T. P. Ghosh, Accounting Standards and Corporate Accounting Practices, Taxman Publications.

DSC F 5.6 Accounting for Government Entities

Unit-I: General Principles - Government Accounting System - Consolidated Fund of India - Comparison with Commercial Accounting system.

Unit-II: Role of Comptroller and Auditor General of India - Role of Public Accounts Committee, Review of Accounts - Civil and Commercial Entities.

Unit-III: Government Accounting Standards issued by Government Accounting Standards Advisory Board (GASAB) - Adoption and Review.

Unit-IV: Financial Reporting in Public Sector Undertakings and Government Companies.

Unit-V: Case Studies: Railway Accounts - Defense Accounts - CPWD Accounts, etc.

References:

1. Jain, S.P., Narang, K.L., Advanced Accountancy (Vol-1), Kalyani Publishers, Ludhiana.
2. Paul Marcus Fischer, William James Taylor & Rita Hartung Cheng, Advanced Accounting, Cengage Learning, USA.
3. K.K. Bhardwaj, Public Accounting and Auditing (office of the Comptroller and Auditor General of India), Mittal Publications, New Delhi.
4. Mortimer A. Dittenhofer, Applying Government Accounting Principles, LexisNexis.
5. Warren Ruppel, Governmental Accounting: Made Easy, John Wiley & Sons, INC., USA.
6. A Mukherjee & M. Hanif, Modern Accountancy, Tata McGraw Hill Publishing Company Limited, New Delhi.
7. K. B. Verma, Reading in Indian Railway Finance, Academic Foundation, Delhi.

5.7: Project work

Cluster Elective -4: Security Market Operations

DSC F 5.5 Financial Markets

Unit-I: **Financial Markets**: Financial Instruments - Intermediaries - Services - Structure of Financial Market in India.

Unit-II: **Capital Market**: Role, Evolution in India - Future Trends - Primary Market - Issue of Capital: Process, Pricing, Methods of Issue, Book-building - Managing Shareholders Relations.

Unit-III: Secondary Market: Growth, Development, Regulation - Stock Exchange Mechanism: Trading, Settlement - Carry Forward, Badla system - Insider Trading, Price Rigging.

Unit-IV: **Players on Stock Exchange**: Investors, Speculators, Market Makers, Bulls, Bears, Stags - Stock Exchange Regulations - Stock Indices - Regulations and Regulatory Agencies (SEBI).

Unit-V: **Bond Market in India:** Bond Market and its Interface with Equity Market and Debt Market - Mutual Funds.

References:

1. Gupta, L.C: Stock Exchange Trading in India; Society for Capital Market Research and Development, Delhi.

2. Bhole, I.M., Financial Institutions and Market, Tata McGraw Hill.

3. Vasant Desai, Indian Financial System, Himalaya Publishing House.

4. Pathak, Bharati V., Indian Financial System: Markets, Institutions and Services, Pearson Education (Singapore), New Delhi.

5. Gordon E. & K. Natarajan, “Financial Markets and Services”, Himalaya Publishing House, New Delhi.

DSC F 5.6 Stock Market Operations

Unit-I: **Listing of Securities:** Merits and demerits - Listing requirements, Procedure, Fee - Listing of rights issue, bonus issue, further issue - Listing conditions of BSE and NSE- Delisting.

Unit-II: Indian Stock Exchanges: BSE – NSE - BOLT System – Demat and Electronic transfer of Securities – Institutional segment – RETDEBT market (RDM).

Unit-III: Trading System: Different trading systems - NEAT system, Market types, Order Types - Order management, Trade Management, Auction Internet Broking.

Unit-IV: Clearing and Settlement: Transaction cycle - Settlement process and agencies - Risks in settlement – Securities and Funds settlement - De-mat settlement – Shortages handling - Identification Number.

Unit-V: Stock Market Indices: Purpose and Considerations in developing index - Stock market indices in India - BSE Sensex - Scrip selection criteria - Construction – NSE indices – S&P CNX Nifty – OTCEI.

References:

1. Punithavathy Pandian, Security Analysis and Portfolio Management, Vikas Publishing House, New Delhi.
2. V. A. Avadhani, Investment and Securities Market in India, Himalaya Publishing House.
3. Prasanna Chandra, Security Analysis and Portfolio Management, Tata McGraw-Hill.
4. Sanjeev Agarwal, A Guide to Indian Capital Market, Bharat Publishers
5. Ravi Puliani and Mahesh Puliani, Manual of SEBI, Bharat Publication

5.7: Project work

Cluster Elective -5: Banking and Financial Services

DSC F 5.5 Central Banking

Unit-I: Introduction: Evolution and Functions of Central Bank - Development of Central Banks in Developed and Developing countries - Trends in Central Bank Functions.

Unit-II: Central banking in India: Reserve Bank of India - Constitution and Governance, Recent Developments, RBI Act. - Interface between RBI and Banks.

Unit-III: Monetary and Credit Policies: Monetary policy statements of RBI - CRR - SLR - Repo Rates - Reverse Repo Rates - Currency in circulation - Credit control measures.

Unit-IV: Inflation and price control by BRI: Intervention mechanisms - Exchange rate stability - Rupee value - Controlling measures.

Unit-V: **Supervision and Regulation**: Supervision of Banks - Basle Norms, Prudential Norms, Effect of liberalization and Globalization - Checking of money laundering and frauds.

References:

1. Reserve Bank of India Publication, Functions and Working of the RBI.
2. Vasant Desai, Central Banking and Economic Development, Himalaya Publishing.
3. S. Panandikar, Banking in India, Orient Longman.
4. Reserve Bank of India Publication, Report on Trends and Progress of Banking in India.
5. Annual Reports of Reserve Bank of India.
6. Rita Swami, Indian Banking System, International Publishing House Pt. Ltd..
7. S.V. Joshi, C.P. Rodrigues and Azhar Khan, Indian Banking System, MacMillan Publishing.

DSC F 5.6 Rural and Farm Credit

Unit-I: Rural Credit: Objectives and Significance of Rural credit - Classification of rural credit - General Credit Card (GCC) – Financial Inclusion - Rupay Card.

Unit-II: Rural Credit Agencies: Institutional and Non-institutional Agencies for financing agriculture and Rural development - Self-Help Groups (SHG) - Financing for Rural Industries.

Unit-III: Farm Credit: Scope - Importance of farm credit - Principles of Farm Credit - Cost of Credit - Types - problems and remedial measures - Kisan Credit Card (KCC) Scheme.

Unit-IV: Sources of Farm Credit: Cooperative Credit: PACS - APCOB - NABARD - Lead Bank Scheme - Role of Commercial and Regional Rural Banks - Problems of recovery and over dues.

Unit-V: Farm Credit Analysis: Eligibility Conditions - Analysis of 3 R's (Return, Repayment Capacity and Risk-bearing Capacity) - Analysis of 3 C's of Credit (Character, Capacity and Capital) - Crop index reflecting use and farm credit - Rural Credit Survey Reports..

References:

1. National Bank of Agricultural and Rural Development (NABARD) Annual report.
2. Economic Survey, Government of India.
3. Rural Development, Sundaram I.S., Himalaya Publishing House, Mumbai.
4. Rural Credit in India, C.S.Rayudu, Mittal Publications.
5. Farm Credit and Co-operatives in India, Tiruloati V., Naidu. V T Naidu, Vora & Co. Pub. Ltd.

5.7: Project work

Cluster Elective -6: Taxation

DSC F 5.5 Assessment of Tax: Individual, HUF and Partnership

Unit-I: **Deductions u/s 80:** Basic rules of deductions, deductions in computing total income.

Unit-II: Set off and Carry forward of Losses: Set off of loss from one source against income from another source, carry forward and set off of losses - brought forward of losses.

Unit-III: **Assessment of Individuals:** Computation of Total income of Individuals and Tax liability - Rates of Income tax.

Unit-IV: Assessment of Tax of HUF: Computation of Gross Total Income and Total Income of a Hindu Undivided Family - Rates of Income tax.

Unit-V: Assessment of Tax of Partnership: Computation of Gross Total Income and Total Income of Partnership Firm - Deductions U/S 80.

References:

1. H C Meharotra & S P Goyal, Income Tax Law & Accounts: Sahitya Bhavan Publications.
2. Vinod. K. Singhania; Direct Taxes – Law and Practice, Taxman Publications
3. B.B. Lal, Direct Taxes, Konark Publications.
4. Vinod K Singhania, Students' Guide to Income Tax, Taxman Publication.

DSC F 5.6 Corporate Taxation

Unit-I: Tax Provisions of Companies: Income from Business or Profession, Tax Provisions for certain types of businesses.

Unit-II: Tax Provisions of Companies: Capital Gains, Income from Other Sources - Tax Provisions for Off shore and Special Tax Zones.

Unit-III: Computation of Taxable Income: Computation of Gross Total Income - Deductions - Carry-forward and set-off of losses - Minimum Alternative Tax (MAT).

Unit-IV: Filing of Return and Assessment: Procedure for Filing Returns, e-Filing, Assessment, Reassessment and Settlement of Cases, Special Procedure for Assessment of Search Cases.

Unit-V: Tax Authorities and Administration: Powers and Duties – Appeals and Revisions - Tax Administration - Collection of Tax at Source – Advance payment of Tax – Recovery and Refund of Tax – Penalties, Offences and Prosecution.

References:

1. T.S.Reddy & Y.Hari Prasad Reddy, Income Tax Theory, Law and Practice, Margham Publications, Chennai.
2. Vinod K Singhania, Students' Guide to Income Tax, Taxman Publication.
3. R. Bupathy, A study on Income Tax & CST, Prime Knowledge Series, Chennai.
4. Mehrotra & Sr. Goyal, Income tax Law and Accounts, Sahitya Bhavan Publication
5. Vinod. K. Singhania; Direct Taxes – Law and Practice, Taxman Publications

5.7: Project work

Cluster Elective -7: Insurance

DSC F 5.5 Life Insurance

Unit-I: Principles of Life Insurance: Life Insurance Products - Pensions and Annuities - Risk Assessment and Underwriting - Premium Setting- Product Development - Tax planning.

Unit-II: Principal of Utmost Good Faith: Insurable Interest, Medical Examination - Age proof, Special reports - Premium payment - Lapse and revival – Premium, Surrender Value, Non-Forfeiture Option - Assignment Nomination Loans – Surrenders - Foreclosure.

Unit-III: Features of Life insurance contract: Types of Policies – Investment of funds – Bonus option – Annuity Contracts - Group Insurance – Group Gratuity Schemes - Group Superannuation Schemes, Social Security Schemes, etc.

.

Unit-IV: Plans of Life Insurance: Types of Plans: Basic - Popular Plans - Convertible - Joint Life Policies - Children‘s Plans - Educational Annuity Plans - Variable Insurance Plans – Riders - For Handicapped, etc.

Unit-V: Policy Claims: Maturity claims, Survival Benefits, Death Claims, Claim concession - Procedures - Problems in claim settlement - Consumer Protection Act relating to life insurance and insurance claims.

References:

1. G. S. Pande, Insurance – Principles and Practices of Insurance, Himalaya Publishing.
2. C. Gopalkrishna, Insurance – Principles and Practices, Sterling Publishers Private Ltd.
3. G. R. Desai, Life Insurance in India, MacMillan India.
4. M. N. Mishra, Insurance Principles and Practices, Chand & Co, New Delhi.
5. M.N.Mishra, Modern Concepts of Insurance, S.Chand & Co.
6. P.S. Palandi, Insurance in India, Response Books – Sagar Publications.
7. Taxman, Insurance Law Manual.

DSC F 5.6 Non-Life Insurance

Unit-I: Introduction: General Insurance Corporation Act - Areas of General Insurance - Structure - Classification - Salient features of Indian general insurance market.

Unit-II: **Motor Insurance**: Motor Vehicles Act 1988 - Requirements for compulsory third party insurance - Certificate of insurance – Liability without fault – Compensation on structure formula basis - Hit and Run Accidents.

Unit-III: **Fire Insurance**: Features – Kinds of policies – Policy conditions – Payment of claims – Standard Fire and Special peril Policy - Documentation - Cover Note - Calculation of premium.

Unit-IV: Marine Insurance: Contract of Marine Insurance – Classes of policies – Function of Marine insurance - Policy conditions – Marine Losses - Insurance intermediaries.

Unit-V: **Agriculture Insurance**: Types of agricultural insurances - Crop insurance - Problems of crop insurance - Crop Insurance vs Agricultural relief - Considerations in Crop insurance - Live Stock Insurance.

References:

1. M. N. Mishra, Insurance Principles and Practices, Chand & Co, New Delhi.
2. M.N.Mishra, Modern Concepts of Insurance, S.Chand & Co.
3. P.S. Palandi, Insurance in India, Response Books – Sagar Publications.
4. C. Gopalkrishna, Insurance – Principles and Practices, Sterling Publishers Private Ltd.
5. G. R. Desai, Life Insurance in India, MacMillan India.

5.7: Project work

Cluster Elective -8: Logistics and Supply Chain Management

DSC F 5.5 Logistics Management - Surface

Unit-1: Logistics: Logistics and Physical Distribution - Functions of Logistics Management - Structure of logistics - Logistics Costs - Customer Service –Logistics in 21st Century.

Unit-II: Logistics and Customer Relationship Management: Customer Service as a Link between Logistics and Marketing - Customer Service and Customer Retention – Integrating Logistics and Customer Relationship Management.

Unit-Ill: Managing the Lead Time: Role of Time in Competitive Advantage - P:D Ratios and Lead Time Gap - Time-based Mapping - Managing Timeliness in the Logistics Pipeline -Methods for implementing Time based practices.

Unit-IV: Transport Operations: Means of Surface Transport: Rail – Road – Network connections – Problems of Surface transport.

Unit-V: Logistics International Scenario: Drivers and Logistics implications of Internationalization - Trend towards Internationalization - Organizing for International Logistics - Challenges of International Logistics - General Tendencies.

References:

1. Shailesh Kasande, Materials and logistics Management, Nirali Prakashan
2. L. C. Jhamb, Materials and logistics Management, Everest Publishing House.
3. Purchasing and Supply Management - Dobler and Burt, McGraw Hill Company
4. Purchasing and Inventory Management - K S Menon, Shroff Publishers.
4. Introduction to Materials Management – J R Tony Arnold, Prentice Hall
7. Logistics & Supply Chain Management – Martin Christopher, Prentice Hall.

DSC F 5.6 Logistics Management - Air and Sea

Unit 1: Airline Logistics: History - Regulatory Bodies - Navigation systems - Air Transport System - Operations - Civil Aviation - Safety and Security - Industry regulations.

Unit II: Air Cargo: Air freight - Exports and Imports - Documentation - Cargo Operations Process - Air-way bill - Consignee controlled cargo - Customs clearance - Routing Instructions - Future trends.

Unit -III: Sea Cargo: Shipping Liners - Advices - Booking - Containerization -Container Numbering - Process flow - Shipping Sales - Leads - Quotations - Customer Service.

Unit IV: Shipping Operations: Volume/Weight calculations - Shipment Planning - Preparing and loading containers- Types of Container services - FCL - LCL - Container de-stuffing.

Unit V: Documentation: Bill of Lading - MBL - HBL - CY - CFS - Sea Way bill - Multimodel Transport Document (MTD) - Invoicing - Release of cargo - Consortium.

References:

1. Peter S. Smith (Faber), Air freight: Operations, Marketing and Economics, Research and Development Bureau, Illinois Central System.

2. P.S.Senguttavan, Fundamental of Air Transport Management, Excel Books.

3. John F. Wilson (Harlow: Longman), Carriage of goods by Sea, Longman

4. Yuen Ha Lun, Kee Hung Lai, Tai Chiu Edwin Cheng (Springer), Shipping and Logistics Management, Springer

5. Alan Rushton, Phil Croucher & Peter Baker (CILT), Logistics and Distribution Management, Kogan Page Ltd.

5.7: Project work

Cluster Elective -9: Advertising and Sales Promotion

DSC F 5.5 Advertising and Media Planning

Unit-I: **Advertising Functions:** Types of Advertising - Economic and Social aspects of advertising - Advertising process - Advertising objectives and Budget.

Unit- II: **Consumer Behaviour:** Consumer decision making process – Consumer perception process - Consumer Choices - Consumer surplus.

Unit- III: **Creativity Advertising:** Creative thinking – Process – Appeals – Copy Writing – Print Copy elements, Headlines – body Copy – Slogan elements of design and principles of design.

Unit- IV: **Media Planning and Strategy**: Market Analysis - Development of Media Plan - Implementing Media Strategies, Media Mix and Target Market Coverage - Media Reach and Frequency - Scheduling.

Unit-V: Designing Print Advertisement: Print Format Lay-out – Designing page – Working with visuals – Print and Electronic Media - Present trends - Class Vs. Mass media.

References:

1. Chunawalla & K.C.Sethia, Foundation of Advertising Theory & Practice, Himalaya Publishing House, New Delhi.
2. William H. Bolew, Advertising, John Wiley & Sons, New York.
3. Asker, David and Myers John G., Advertising Management, Prentice Hall of India, New Delhi.
4. Aaker David A, Batra Rajeev, Myers G., Advertising Management, PHI, New Delhi.
5. Sundage, Fryburger, Rotzoll, Advertising Theory and Practice, AITBS, New Delhi.

5.7: Project work

DSC F 5.6 Brand Management

Unit-I:Brand Concept: Brands vs. Products, Benefits of branding; Brand attributes, Significance of branding to consumers and Firms, selecting brand names - Brand life cycle - Brand loyalty.

Unit-II: Brand Equity: Cost, Price and Consumer Based methods - Sustaining Brand Equity - Brand Personality - Formulation - Brand Image vs. Brand Personality - Brand Reinforcement, Brand Revitalization.

Unit-III: **Brand Building and Positioning**: Brand Positioning vs. Brand Building - Brand knowledge, Brand hierarchy, Strategy, Extension and Transfer, Managing brand over time.

Unit-IV: Brand Portfolios and Segmentation: Identifying and establishing brand portfolio - Brand Segmentation - Portfolio and Brand values - Evaluation and Revision.

Unit-V: Branding in Different Sectors: Agriculture - Education - Health - Tourism - Hospitality and other services - Role of e-Communities in Brand Management.

References:

1. Aaker, David, Managing Brand Equity, Prentice Hall of India.
2. Brand Positioning Strategies for Competitive Advantage -Subrato Sen Gupta
3. Kumar, Ramesh, Managing Indian Brands, Vikas Publishing House, Delhi.
4. Keller K. L., Strategic Brand Management, 2nd Edition, Pearson Education.
5. Strategic Brand Management - Kevin Lane Keller, Prentice Hall.
6. Branding Concepts and Process - Debashish Pati, McMillan Publishers.
7. Successful Branding - Pran K Choudhary, University Press, New Delhi.

Cluster Elective -10: Computer Applications

DSC F 5.5 Database Management & Report Generator

Unit-I: MS Word: Formatting Text and Documents - Working with Headers, Footers and Footnotes – Tabs -Tables and Sorting - Working with graphs - Templates, Wizards and sample documents.

Unit-II: Power Point Basics: Creating Presentations; working with text in Power Point -Working with Graphs & Multimedia – Model presentations.

Unit-III: MS Excel: Features – Formatting in Excel – Tips and Techniques – Charts preparation – Using Excel worksheets as Data bases.

Unit-IV: Dbase Management: Creating Databases – Tables - Entering and Editing Data – Printing of Reports – Working with Access – Model Presentations.

Unit-V: Relational Databases – Expressions – Macros and other Automations – Graphics in Databases – Customized reports generation – Problems – Model Reports,

References:

1. Mansfield R: Working with Microsoft Office T.M.H.Osborne.
2. Paneerselvam: Database Management Systems, PHI.
3. David Kruglinski, Osborne, Data Management System McGraw Hill Publication.
4. Shgirley Neal and Kenneth LC Trunik Database Management Systems in Business – PHI.
5. Godeon C. EVEREST, Database Management – McGraw Hill Book Company.
6. MARTIN, Database Management – Prentice Hall of India, New Delhi.
7. Bipin C. Desai, “An Introduction to Database Systems”, Galgotia Publications.

DSC F 5.6 Management Information System

Unit-I: MIS: Types of Management Systems - Hardware support for MIS - Decision Making Process, System Approach to Problem Solving, Structure of Management Information System - Trends in MIS.

Unit-II: MIS and Business Process Outsourcing: Business Process Outsourcing - Improving a process in BPO, Object Oriented methodology, BPO – Current Focus - Managing the E-enterprise, Organization of Business in an e-Enterprise, e-Business, e-Commerce, e-Collaboration.

Unit-III: Decision Support Systems: Deterministic Systems, Marketing Information System – Financial Information System – Human Resource Information System - Operations Management Systems - Knowledge Management System.

Unit IV: Database Management Systems: Data Models – Design of Database – Implementation – DGMS – Design of MIS and DSS Systems.

Unit-V: MIS and Case Development: Designing MIS for a College – University – Business Unit-Service Organization – NGOs.

References:

1. Jawadekar, Management Information System, Tata McGraw Hill, New Delhi.
2. C.S.V. Murthy, Management Information System, Himalaya Publishing House, Mumbai.
3. Keen Peter G.W.: Decision Support System: An Organizational Perspective, Addison-Wesley Pub.
4. G.V.Satya Sekhar, Management Information System**,** Excel Books, New Delhi.
5. Turban, Efrain Decision Support and Expert Systems – Management Perspective - McMillan Publishing Company, New York.
6. Sadagopan: Management Information Systems, Prentice Hall of India, New Delhi
7. Nirmalya Bagchi, Management Information Systems, Vikas Publishing House Pvt. Ltd

5.7: Project work

Semester VI

DSC 1 G 6.2 Marketing

Unit-I: **Introduction:** Concepts of Marketing: Product Concept – Selling Concept - Societal Marketing Concept – Marketing Mix - 4 P's of Marketing – Marketing Environment.

Unit-II: **Consumer Markets and Buyer Behaviour:** Buying Decision Process – Stages – Buying Behaviour – Market Segmentation – Selecting Segments – Advantages of Segmentation.

Unit-III: Product Management: Product Life Cycle - New products, Product mix and Product line decisions - Design, Branding, Packaging and Labeling.

Unit-IV: Pricing Decision: Factors influencing price determination, Pricing strategies: Skimming and Penetration pricing.

Unit-V: Promotion and Distribution: Promotion Mix - Advertising - Publicity – Public relations - Personal selling and Direct marketing - Distribution Channels – Online marketing- Global marketing.

References:

1. Philip Kotler, Marketing Management, Prentice Hall of India.
2. Philip Kotler & Gary Armstrong, Principles of Marketing, Pearson Prentice Hall
3. Stanton J. William & Charles Futrel, Fundamentals of Marketing, McGraw Hill Company
4. V.S. Ramaswamy S. Nama Kumari, Marketing Management – Planning, McMillan

DSC 2G 6.3 Auditing

Unit-I: Auditing: Meaning – Objectives – Importance of Auditing – Auditing as a Vigil Mechanism – Role of Auditor in checking corporate frauds.

Unit-II: Types of Audit: Based on Ownership and time - Independent, Financial, Internal, Cost, Tax, Government, Secretarial audits.

Unit-III: Planning of Audit: Steps to be taken at the commencement of a new audit - Audit programme - Audit note book - Internal check, internal audit and internal control.

Unit-IV: Vouching and Investigation: Vouching of cash and trading transactions - Investigation, Auditing vs. Investigation

Unit-V: Company Audit and Auditors Report: Auditor's Qualifications – Appointment and Reappointment – Rights, duties, liabilities and disqualifications - Audit report: Contents – Preparation - Relevant Provisions of Companies Act, 2013.

References:

1. S.Vengadamani, “Practical Auditing”, Margham Publications, Chennai.
2. Ghatalia, “Principles of Auditing”, Allied Publishers Pvt. Ltd., New Delhi.
3. Pradeesh Kumar, Baldev Sachdeva & Jagwant Singh, “Auditing Theory and Practice, Kalyani Publications, Ludhiana.
4. N.D. Kapoor, “Auditing”, S. Chand, New Delhi.
5. R.G. Saxena, “Principles and Practice of Auditing”, Himalaya Publishing House, New Delhi.
6. Jagadesh Prakesh, “Principles and Practices of Auditing” Kalyani Publications, Ludhiana.
7. Kamal Gupta and Ashok Gupta, “Fundamentals of Auditing”, Tata McGraw Hill
8. B.N. Tondan, “Practical Auditing”, S.Chand, New Delhi.

DSC 3G 6.4 Management Accounting

Unit–I: Management Accounting: Interface with Financial Accounting and Cost Accounting **-** Financial Statement analysis and interpretation: Comparative analysis – Common size analysis and trend analysis (including problems).

Unit–II: Ratio Analysis: Classification, Importance and limitations - Analysis and interpretation of Accounting ratios - Liquidity, profitability, activity and solvency ratios (including problems).

Unit–III: Fund Flow Statement: Concept of fund: Preparation of funds flow statement. Uses and limitations of funds flow analysis (including problems).

Unit–IV: Cash Flow Statement: Concept of cash flow – Preparation of cash flow statement - Uses and limitations of cash flow analysis (including problems).

Unit–V: Break-Even Analysis and Decision Making: Calculation of Break-even point - Uses and limitations - Margin of safety – Make/Buy Decision - Lease/own Decision (including Problems).

References:

1. S.N. Maheswari, A Textbook of Accounting for Management, S. Chand Publishing, New Delhi.
2. I.M Pandey, "Management Accounting", Vikas Publishing House, New Delhi,
3. Shashi K. Gupta & R.K. Sharma, "Management Accounting: Principles and Practice", Kalyani Publishers, Ludhiana.
4. Jawahar Lal, Accounting for Management, Himalaya Publishing House, New Delhi.
5. Charles T. Horngren, et.al, "Introduction to Management Accounting" Person EducationIndia, New Delhi, 2002.
6. Murthy & Guruswamy – Management Accounting, Tata McGraw Hill, New Delhi.
7. Dr. Kulsreshtha & Gupta – Practical problems in Management Accounting.
8. Bhattacharya, D., "Management Accounting", Pearson Education India, New Delhi.
9. S.P. Gupta – Management Accounting, S. Chand Publishing, New Delhi.

Cluster Elective -1A: E-Commerce

DSC H 6.5 e-Payments System

Unit-I: e-Cash and Virtual Money: Electronic Data Interchange (EDI) - NEFT/RTGS/Electronic Payment modes - Foundations of e-Cash and Issues; Security, Anonymity, Untraceability, Virtual currencies, Bitcoin.

Unit-II: Automated Clearing and Settlement: Process of Real Time Gross Settlement System - Net Settlement -ATM Networks - Fedwire, CHIPS and SWIFT.

Unit-III: e-Payment Security and Digital Signature: Cryptographic Methods - Hash functions - Public/Private Key methods: RSA - Digital Signatures - Certification Process - Digital identity Documents and Remote Authentication.

Unit-IV: **Mobile Payments:** Wireless payments, Digital Wallets, Google Wallet – Obopay - Security Challenges.

Unit-V: Electronic Invoice and Payment System: Electronic Statement Delivery - EIPP providers - Biller service providers - Customer service providers - Reconciliation through Bank -Invoice Paper elimination - Scan-based trading (SBT).

References:

1. Domonique Rambure and Alec Nacamuli, "Payment Systems: From the Salt Mines to the Board Room", Palgrave MacMillan.
2. Weidong Kou, *"Payment Technologies for E-Commerce".* Springer, Germany.
3. Donal O'Mahony, Michael Peirce and Hitesh Tewari, "Electronic Payment Systems", Artech House, Inc.
4. M. H. Sherif, Protocols for Secure Electronic Commerce, Boca Raton, Fla, CRC Press.

DSC H 6.6 Social Media and e-Marketing

Unit-I: Social Media: Career in Social Media Marketing - Strategic Marketing - Social media Planning process - Campaigns (tactics and results).

Unit-II: Social Consumers: Social media marketing segments - Digital consumers - Digital communities - Online communities - Strong & Weak Ties - Social Community - Social Publishing.

Unit-III: Social Media Sites: Face book - Twitter - LinkedIn - YouTube and their Operations - Data mining and Social Media - Role of Social Media in Marketing Research - Social Media and Privacy/Ethics.

Unit-IV: e-Marketing: Objectives, Online Advertising - Distribution in e-Marketing, Lead Generation Platform - Customer Service mechanism - Relationship Building medium.

Unit-V: **Methods of e-Marketing**: Advertising Techniques, Selling Methods, Sales Promotion - Public Relations - Sponsorship, Merchandising, Teleconferencing - Chatting.

References:

1. Chaffey, D., e-Marketing Excellence: Planning and Optimizing Your Digital Marketing, Burlington: Elsevier.

2. Hanson, W. A. & Kalyanam, K., Internet Marketing & e-Commerce, Thomson Southwestern, Mason, Ohio.

5. Harris, L., Marketing the e-Business, Hoboken: Taylor & Francis.

6. Krishnamurthy, S., Contemporary research in e-Marketing, Hershey, PA: Idea Group Publication.

7. Stephen Dann & Susan Dann, E-Marketing: Theory and Application, Macmillan, New York.

8. Seth Godin, E-Marketing, Berkley Publishing Group.

9. Irvine Clarke & Theresa B. Flaherty Advances in Electronic Marketing, Idea Group Publishing, Hershey.

6.7: Project work

Cluster Elective -2A: Retailing

DSC H 6.5 Agricultural and Rural Marketing

Unit-I Concept of Rural Market: Rural market Characteristics - Rural markets and Environmental factors - Agricultural Market Yards.

Unit-II Rural Consumer Behaviour: Rural vs. Urban Consumer – Relevance of Marketing mix for Rural market/Consumers - Problems in rural market - Life Style Marketing – Rural market Segmentation.

Unit-III: Agricultural Marketing: Problems and Challenges in Agriculture Marketing - Market Yards - Support prices - Rural Warehousing.

Unit-IV: Agriculture Support Mechanism: Role of CCI, Tobacco Board, Spices Board, Coffee Board, Tea Board - Agriculture Price Commission.

Unit-V: **Export potential for Agro-products:** Role of Government and Non-Govt. Agencies in the development of rural and agricultural Marketing - Strategies for supply of Seed, Fertilizers, Pesticides, Farm Equipment.

References:

1. C.S.G.Krishnamacharyulu & Lalitha Ramakrishnan, "Rural Marketing: Text and Cases", Pearson Education, New Delhi.
2. Awadhesh Kumar Singh & Satyaprakash Pandey, Rural Marketing: Indian Perspective, New Age International Publishers, New Delhi.
3. Mamoria, C.B. & Badri Vishal: Agriculture Problems in India
4. Arora, R.C., "Integrated Rural Development", S. Chand Limited, New Delhi.
5. Gopalaswamy, T.P., "Rural Marketing: Environment, Problems and Strategies, Vikas Publishing House Pvt. Ltd., New Delhi.
6. Bedi & Bedi, "Rural Marketing", Himalaya Publishing House, New Delhi.

DSC H 6.6 Warehouse Management

Unit-I: **Concept of Warehouse**: Functions of Warehouses - Warehousing Cost - Warehousing Management Systems (WMS) - Strategic planning for Warehousing - Supply Chain and Warehousing.

Unit-II: Role of Warehousing in Retail: Challenges in retail warehousing, Warehousing in fashion retail - Retail product tracking in warehouse using RFID - Role of government in warehousing - Warehousing and Supply Chain.

Unit-III: Warehouse Operations: Structure - Inventory Receiving - Picking - Locating - Dispatching Maintenance - Security and Safety - Records Maintenance.

Unit-IV: **Health and Safety Perspective**: Health and Safety Risks at Warehouse, Assessment of Risks, Management of Health and Safety risks - Bar Code Scanners, Wireless LAN, Mobile Computers, Radio Frequency Identification (RFID).

Unit-V: Warehousing Practices: FCI, CWC, Reliance - Wal-Mart - KFC **-** ICT Applications in Warehouse - World-class Warehousing.

References:

1. Edward H. Frazelle, World Class Warehousing and Material Handling.
2. Gwynne Richards, Warehouse Management: A Complete guide to improving efficiency and minimizing costs in the modern warehouse, Kogan Page, London.
3. Stuart Emmett, Excellence in Warehouse Management: How to Minimize costs and Maximize Value, John Wiley & Sons, Ltd., London.
4. James A. Tompkins & Jerry D. Smith, The Warehouse Management Handbook, Tompkins Press, North Carolina.

5. David E. Mulcahy & Joachim Sydow, Supply Chain Logistics Program for Warehouse Management, CRC Press, New York.

6.7: Project work

Cluster Elective -3A: Corporate Accounting

DSC H 6.5 Financial Reporting

Unit-I: Corporate Financial Reporting: Issues and problems of financial statements - Balance sheet and profit and loss account - Recent trends in reporting.

Unit-II: Consolidated Financial Statements: Purposes of consolidated financial statements - Consolidation procedures – Minority interests, Goodwill, Treatment of pre- acquisition and post-acquisition profits.

Unit-III: Companies Act 2013 - Reporting requirements - National Finical Reporting Authority (NFRA).

Unit-IV: Companies Act, 2013 - Board of Directors - Director's Report - Business Responsibility report - Corporate Governance Reporting - Corporate Social Responsibility reporting.

Unit-V: Developments in Financial Reporting: Value Added Statements: Economic Added Value, Market Value - Shareholders' Value - Human Resource Reporting – Reporting on Price Level changes.

References:

1. P.C. Tulsian & Bharat Tulsian, Financial Reporting, S. Chand, New Delhi.
2. RSN Pillai, Bhagirathi & S. Uma, Fundamentals of Advanced Accounting, Vol.1, S.Chand, New Delhi.
3. Nehru J. Financial Reporting by diversified Companies, Vision Books, New Delhi.
4. Hawkins David, Financial Statements Corporations, Dow Jones- Irwin Homewood.
5. Paul Marcus Fischer, William James Taylor & Rita Hartung Cheng, Advanced Accounting, Cengage Learning, USA.
6. Maheswari S N., Maheswari S K., Corporate Accounting, Vikas Publishing House Pvt. Ltd., New Delhi.

7. S.K.Gupta, Financial Analysis and Reporting, Kalyani Publishers, Ludhiana.

DSC H 6.6 Emerging Areas in Accounting

Unit-I: Human Resource Accounting: Methods: Cost approach - Replacement cost approach - Present value of future earnings approach – Expense model - Model on human resource accounting (including problems).

Unit-II: Social Accounting: Rationale for Social Accounting - Qualitative and quantitative social accounting disclosures - Evaluation of social accounting reports.

Unit-III: Inflation Accounting: Historical Cost basis of Financial statements – Limitations – Evolution of Inflation accounting - Constant-rupee accounting - International standard for hyperinflationary accounting (including problems)

Unit-IV: Environmental Accounting: Qualitative and quantitative Environmental accounting disclosures - Evaluation of Environmental accounting reports - Green Accounting - Concept and implementation.

Unit-V: Special Areas in Accounting: Intrinsic Value Accounting – Resource Consumption Accounting – Forensic Accounting – Fund Accounting – Hedge Accounting.

References:

1. Gupta R. L. – Advanced Financial Accounting – S. Chand & Sons

2. Shukla and Grewal: Advanced Accounts, S. Chand & Ltd. New Delhi.

3. Jain and Narang: Advanced Accounts, Kalyani Publishers, Ludhiana.

4. Gupta, Shashi K. & Sharma, R.K., Management Accounting: Principles and Practice, Kalyani Publishers, Ludhiana.
5. L. S. Porwal : Accounting Theory, Tata McGraw Hill

6. S. N. Maheshwari : Corporate Accounting,Vikas Publishing House Pvt. Lit. New Delhi.

7. Ashok Sehgal& Dr. Deepak Sehgal: Advanced Accounting, Taxmen, New Delhi.

8. Mukherji and Hanif - Modern Accounts, Vol. I and II, Tata McGraw Hill.

9. R. L. Gupta & V. K. Gupta - Advanced Accounting, Sultan Chand, New Delhi.

6.7: Project work

Cluster Elective -4A: Security Market Operations

DSC H 6.5 Derivatives Trading

Unit-I: Derivatives: Forward and Futures Contracts – Options – Swaps – Types of Traders – OTC and Exchange Traded Securities - Risks in Derivatives.

Unit-II: Futures Contract: Specifications - Margin Requirements – Marking to Market – Types of Futures - Relationship between Future, Forward and Spot Prices - Futures Trading and operations.

Unit-III: Options: Types: Call and Put – American and European – Intrinsic value and Time value of Options – Option payoff – Futures vs. Options - Trading operations.

Unit-IV: Swaps: Types: Interest Rate – Currency – Role of financial intermediaries in Swaps trading - Credit Risk - Swaps trading in India.

Unit-V: Derivatives Trading in India: Regulations - Framework – Exchange trading in Derivatives – Stock Futures and Index futures in NSE – Interest Rate Derivatives.

References:

1. John.C.Hull, Options, Futures and other Derivative Securities, PHI Learning.

2. Keith Redhead, Financial Derivatives: An Introduction to Futures, Forwards, Options and Swaps, PHI Learning.

3. Stulz, Risk Management and Derivatives, Cengage Learning.

4. Varma, Derivatives and Risk Management.

5. David Dubofsky, 'Option and Financial Futures – Valuation and Uses, McGraw Hill

6. S.L.Gupta, Financial Derivatives- Theory, Concepts and Practice, Prentice Hall of India.

DSC H 6.6 Stock Market Regulatory Framework

Unit-I: Stock Market Regulations: Regulations of Companies Act, 2013 - Registrar of Companies - Powers and Functions - Securities Contract and Regulations Act.

Unit-II: **Stock Exchanges**: Listing of Securities - Conditions - Listing Agreement - Problems in Implementation.

Unit-III: **Securities Exchange Board of India**: SEBI Act - SEBI Guidelines on Initial Public Offerings - Investors' Protection.

Unit-IV: Legal Process of Company: Expansion and Restructuring - Takeover, Amalgamation and Merger – Regulations - Repurchase of own company shares - consequences of non-compliance with the rules.

Unit-V: **Function of Dealers:** Investment advisors and representatives in the capital market - Statutory control on Dealers - Common law and statutory liabilities for malpractices.

References:

1. E. Gordon & H. Natarajan, Capital Market in India, Himalaya publishing House,
2. H.R. Machiraju, Indian Financial system, Vikas publishing House Pvt, Ltd
3. Sanjeev Agarwal, Guide to Indian Capital Market, Bharat Law House
4. V.L. Iyer, SEBI practice Manual, Taxman Allied Service (P) Ltd
5. M.Y. Khan, Indian Financial Systems, Tata McGraw Hill,
6. SEBI Manual, Taxman

6.7: Project work

Cluster Elective -5A: Banking and Financial Services

DSC H 6.5 Financial Services

Unit-I: Financial Services: Role of Financial Services - Banking and Non Banking Companies – Activities of Non Banking Finance Companies- Fund Based Activities - Fee Based Activities .

Unit-II: Merchant Banking Services: Scope and importance of merchant banking services - Venture Capital - Securitization **-** Demat services - Commercial Paper.

Unit-III: Leasing and Hire-Purchase: Types of Lease, Documentation and Legal aspects – Fixation of Rentals and Evaluation - Hire Purchasing- Securitization of debts - House Finance.

Unit-IV: **Credit Rating**: Purpose – Types – Credit Rating Symbols – Agencies: CRISIL and CARE – Equity Assessment vs. Grading – Mutual funds.

Unit-V: Other Financial Services: Factoring and Forfaeiting **-** Procedural and financial aspects - Installment System - Credit Cards - Central Depository Systems: NSDL, CSDL.

References:

1. B. Santhanam, Financial Services, Margham Publication, Chennai.

2.M.Y. Khan, Financial Services, Tata McGraw – Hill, New Delhi.

3. Machendra Raja, Financial Services, S.Chand Publishers, New Delhi.

4. V. A. Avdhani, Marketing of Financial Services.

5. Machiraji, “Indian Financial System”, Vikas Publishers.

6. Sandeep Goel, Financial Services, PHI Learning.

7. L.M. Bhole, Financial Institutions and Markets, Tata McGraw Hill.

8. SEBI Guidelines, Bharat Publications, New Delhi.

9. E. Gordon & H. Natarajan, Capital Market in India, Himalaya publishing House.

DSC H 6.6 Marketing of Financial Services

Unit-I: Difference between Goods and Services: Managing Service Counters – Integrated Service Management – Service Elements.

Unit-II: Constructing Service Environment – Managing People for service Advantage – Service Quality and Productivity – Customer Loyalty.

Unit-III: Pricing and Promotion Strategies: Pricing strategies – Promotion strategies – B2B Marketing – Marketing Planning and Control for services.

Unit-IV: Distributing Services: Cost and Revenue Management – Approaches for providing services - Channels for Service provision – Designing and managing Service Processes.

Unit-V: Retail Financial Services - Investment services – Insurance services - Credit Services - Institutional Financial Services - Marketing practices in select Financial Service Firms.

References:

1. Aradhani "Marketing of Financial Services" Himalaya Publications
2. Sinha and Saho, Services Marketing, Himalaya Publishing House
3. Reddy Appanaiah, Anil Kumar and Nirmala, Services Marketing, Himalaya Publishing.
4. Shajahan, Services Marketing, Himalaya Publishing House.
5. Christopher lovelock, Services Marketing, Pearson Education Asia.
6. Helen Woodroffe – Services Marketing, McMillan India Ltd.
7. S.M. Jha, Services Marketing, New Delhi Himalaya Publishing House.

8. Valarie A. Zeithmal & Mary JoBitner, Services Marketing, New Delhi, Tata McGraw Hill

6.7: Project work

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

B.Com. CBCS SYLLABUS

Semester-VI
DSC H 6.5GOODS & SERVICE TAX AND CUSTOMS ACT

Unit-I: Registration and Filing–Registration of Assesses Under GST - Persons liable for registration - Compulsory registration in certain cases - Procedure for registration - Deemed registration - GST Rate Structure.

Unit-II: Administration: Officers under GST Act: Appointment and Powers of officers- Administration of officers of State tax or Union-territory tax – Accounts and Records – Retention of Records – Audit by Tax Authorities.

Unit-III: Assessment: Self-assessment - Provisional assessment –Security of Returns - Assessment of Non-filers of returns - Assessment of Unregistered persons –Audit and Assessment – Other features of Dual GST model.

Unit-IV: Levy and Exemptionof Tax: Chargeability – Collection at Source –E-Commerce - Composition Levy - Tax under Central GST and State GST - Zero-rating of Exports – GST on Imports –Returns under GST –Taxation of Services–Remission of Tax - Adjustment and Refund of GST.

Unit- V: Customs Act: Types of Custom Duties- Valuation for Customs Duty- Tariff Value- Customs Value- Methods of Valuation for Customs - Problems on Custom Duty Assessment.

References:

1. Goods and Services Tax in India – Notifications on different dates
2. Customs Law Manual and Customs Tariff of India- R K Jain.
3. Background Material on Model GST Law, Sahitya Bhawan Publications, Hospital Road, Agra - 282 003.
4. The Central Goods and Services Tax Act, 2017, NO. 12 OF 2017 Published by Authority, Ministry of Law and Justice, New Delhi, the 12th April, 2017.

SECRETARY, APSCHE

Date: 8.6.2017

DSC H 6.6 Tax Planning and Management

Unit-I: Tax Planning: Difference between tax planning, tax avoidance, tax evasion and tax management – Tax planning with reference to setting up a New Business – Form and Size – Tax Holiday, etc.

Unit-II: Tax Planning of Financial Decisions: Absorption, Mergers, De-mergers and Takeovers – Reorganization or Restructuring of Capital – Decisions such as Borrowing or Investment Decisions.

Unit-III: Tax Planning on Managerial decisions: Own or lease – Make or buy decisions – Repair, replace, renewal or renovation of assets – Shut down or Continue decision.

Unit-IV: Tax planning on Foreign income: Selling in domestic or foreign marker – Avoidance of double taxation agreement – Foreign collaborations and joint ventures.

Unit-V: Foreign Collaborations: Incidence of tax on Domestic companies – Provisions for relief in respect of Double taxation – Double Taxation Avoidance Agreements.

References:

1. E.A. Srinivas, Corporate Tax Planning, Tata McGraw Hill.
2. Vinod K. Singhania, Taxman's Direct Taxes Planning and Management.
3. Taxman, The Tax and Corporate Law Weekly.
4. Bhagawati Prasad, Direct Taxes Laws Practice, Wishwa Prakashan.
5. Ahuja, Girish & Ravi Gupta. Corporate Tax Planning and Management, Bharat Law House.
6. Acharya, Shuklendra and M.G. Gurha, Tax Planning under Direct Taxes. Modern Law Publication, Allahabad.
7. IAS – 12 and AS – 22.
8. T.P. Ghosh, IFRSs. Taxman Publications Pvt. Ltd. New Delhi.

6.7: Project work

Cluster Elective -7A: Insurance

DSC H 6.5 Marketing of Insurance Services

Unit-I: Marketing of Services: Distinction between Product and Service Marketing - 7 Ps of Marketing.

Unit-II: Marketing of Insurance Services: Use of relationship marketing in insurance - Commoditization of insurance - Factors determining service quality of insurance products.

Unit-III: Understanding of Insurance Market - Insurance Market structure and competition - Insurance market penetration and density - Changing profile of Indian insurance buyer - Strategies for marketing of insurance.

Unit-IV: Promotion of insurance: Promotional Mix - Personal Selling vs. Advertising - Factors influencing Promotional Mix - Brand building.

Unit-V: Case Studies: Marketing methods and strategies adopted by LIC, GIC, Bajaj Life, SBI Life, HDFC Life.

References:

1. Gray Armstrong & Philip Kotler, Marketing-An Introduction, Pearson Education, Asia.
2. Shukla A.K, Service Marketing, Vaibhav Laxmi Prakashan Varanasi.
3. Adrian Payne, The Essence of Services Marketing, Prentice Hall of India.
4. K. Rama Mohana Rao, Services Marketing, Pearson Education.

6.7: Project work

DSC H 6.6 Insurance Regulatory Framework

Unit-I: Insurance Legislation in India: Insurance Act, 1938 - Functions of IRDA – Motor Vehicle Act, 1988 – Marine Insurance Act – Bill of Lading Act – Indian Railways Act – Carriage of Goods by Sea Act.

Unit-II: IRDA Regulatory Functions: Validity and Renewal of license – Regulations for Third Party Administrators (TPA) – Procedure for Registration of Insurance companies - Categorization of Surveyors - Inspection.

Unit-III: Regulations on Conduct of Business: Obligation of Insurers for rural and Social sector – Micro Insurance – IRDA guidelines – Anti Money laundering – IRDA regulations on Advertisements – Compliance and control – Statutory warnings.

Unit-IV: Policy Holders Rights of Assignment: Assignment and Transfer of policies – Nomination – Prohibition of Rebates – Provisions of sec 64 VB – Exemptions to Sec 64 VB.

Unit-V: Protection of Policy Holders Interest: Pre and Post stage of Insurance Cycle – Free look period – Grievance Redressal – Complaint handling.

References:

1. Nalini Prava Tripathy & Prabir Pal, Insurance: Theory and Practice, Prentice Hall of India.
2. Loomba, Jatinder, Risk Management and Insurance Planning, Prentice Hall of India.
3. **Venkatesh Babu S., Manjunatha J.M., Manjunatha K.B. & S.K. Podder,** Insurance and Risk Management**, Himalaya Publishing House Pvt. Ltd.**
4. S. Arunajatesan and T.R. Vishwanathan, Risk Management and Insurance, McMillan.
5. Indian Institute of banking and finance, Principles and Practice of Banking, McMillan.
6. Trieschmann, Hoyt and Sommer, Risk Management and Insurance, Cengage Learning
7. George E Rejda Principles of Risk Management and Insurance, Pearson

6.7: Project work

Cluster Elective -8A: Logistics and Supply Chain Management

DSC H 6.5: Supply Chain Management – Products

Unit-I: Introduction: Challenges in Supply chain management, Uncertainty and supply chain management, Supply chain Drivers and Obstacles, Supply chain Network, Different types of Supply Chain Networks.

Unit-II: Demand: Supply Chain Demand – Estimating Demand – Forecasting Techniques –Managing Supply Chain Demand and Supply.

Unit-III: Sources of Inputs: Suppliers – Relations – Sourcing – Vendor Selection – Performance Rating of Suppliers – Suppliers Networks – Supplier Development.

Unit-IV: Output: Customer Selection – Process – Relationship Management **–** Innovations in Supply Chain Management.

Unit-V: **Logistics:** Logistics and Customer Relationships Management – Functions – Structure – Logistics Costs – Customer Service and Logistics Management – Supply Future Challenges.

References:

1. G. Raghuram , Logics and Supply Chain Management, Macmillan.
2. Emiko Bonafield – Harnessing Value in Supply Chain, Johnwiley, Singapore.
3. Dr. Gopal Krishnan – Material Management Rearview, Pearson New Delhi.
4. B.S. Sahay, Macmillan – Supply Chain Management, Pearson Education.
5. Supply Chain Logistics Management – Bowersox, Closs & Cooper – McGraw-Hill.
6. World Class Supply Management – Burt, Dobbler, Sterling, Tata McGraw-Hill.

DSC H 6.6 Supply Chain Management – Services

Unit-I: Concepts of Supply Chain: Features – Role of Supply Chain Management in Services – Design and development of Supply Chain network for Services.

Unit-II: Customer Service: Service Mix – Cost – Pricing of Service – Channels of Distribution-Customer service linkages – Customer satisfaction Enablers – Sourcing and Availing.

Unit-III: Planning Demand and Supply*:* Planning for supply and demand of Services – Demand Forecasting, Supply and Managing variability – Quick Response and Accurate Response System in SCM – Other Planning Strategies.

Unit-IV: Supply Chain Service Operations: Supply Chain Services Planning – Supply Chain Facilities – Capacity Planning – Services Optimization – Dynamic Routing and Scheduling.

Unit-V: Recent Trends in Supply Chain Management: New Developments – Outsourcing Operations, Co-Makership – Role of e-Commerce in Supply Chain Management – Green Supply Chain Management.

References:

1. Sunil Chopra, Supply Chain Management, Pearson Education Publishing
2. G. Raghuram , Logics and Supply Chain Management, Macmillan.
3. Emiko Bonafield – Harnessing Value in Supply Chain, John Wiley, Singapore.
4. Dr. Gopal Krishnan – Material Management Rearview, Pearson New Delhi.
5. B.S. Sahay, Macmillan – Supply Chain Management, Pearson Education.

6.7: Project work

Cluster Elective -9A: Advertising and Sales Promotion

DSC H 6.5 Sales Promotion

Unit-I: **Sales Promotion:** Sales Executive Functions - Sales Promotion and control - Sales organization - Setting-up of Sales organization - Types of Sales organization .

Unit-II: **Personal Selling**: Theories of personal selling - analyzing market potential - sales potential and sales forecasting methods - Distribution policies and pricing policies.

Unit-III: **Sales Operations**: Sales budget, Sales territories, Sales Quata's, Point of Sale - Sales contests - Coupons and discounts - Free offers - Display - Showrooms and Exhibitions.

Unit-IV: Salesmanship: Sales Manager Qualities and functions - Types of salesman - prospecting - pre-approach and approach - selling sequence - psychology of customers.

Unit-V: **Sales force Management:** Recruitment and Selection - Training - Induction - Motivation of sales personnel - Compensation and Evaluation of Sales Personnel.

References:

1. Richard R. Still, Edward W. Cundiff & Norman A.P. Govani, "Sales Management: Decisions, Strategies and Cases", Person Education, New Delhi.
2. McMurry & Arnold, "How to Build a Dynamic Sales Organization", McGraw Hill, W.C.
3. Pradhan , Jakate & Mali, Elements of Salesmanship and Publicity, Kitab Mahal.
4. Anderson Robert, "Professional Sales Management", Prentice Hall of India, New Delhi.
5. Gerald A.Michaelson, Strategies for Selling, Tata McGraw Hill Publishing Co. New Delhi.
6. Building a Winning Sales Team – Gini Graham & Scott, ASJA Press.
7. Professional Sales Management – Anderson, Hair and Bush, McGraw Hill.

DSC H 6.6 Direct Marketing

Unit-I Direct Marketing: Features - Different Strategies - Mailing SMS - MMS - New Channels of Direct Marketing - Marketing Communication plan.

Unit-II: Direct Marketing Creativity: Creative Process and Testing – Direct Mail, Catalogs -Print Advertising - Marketing Intelligence - Relational, Direct and Interactive Marketing - 3's USP and Creativity.

Unit-III: Direct Marketing Media – Magazines, Newspapers and TV/Radio - Telemarketing - Evolution of Digital Marketing and New Customer.

Unit-IV: Social Media and Digital Marketing: Facebook, Twitter, LinkedIn, Emailing - Mobile Marketing - Interactive Television - Blended Direct Marketing - Integrating media and channels

Unit-V: Key factors of Direct Marketing - Digital Marketing Tips - Best practices in digital marketing - Legal Aspects - Practical examples of Flipkart, Amazon, Paytm, etc.

References:

1. Kotler, Philip, Armstrong, Gary, Saunders, John and Wong, Veronica, "Principles of Marketing", Prentice Hall Europe.

2. Bob Stone and Ron Jacobs, Successful Direct Marketing Methods, McGraw Hill..

3. Mary Lou Roberts, Paul D. Berger, Direct Marketing Management, Prentice Hall Publications.

4. Chet Meisner, The Complete Guide to Direct Marketing- Creating Breakthrough Programs that Really Work, Kaplan Publishing.

6.7: Project work

Cluster Elective -10A: Computer Applications

DSC G 6.5 e-Commerce Applications

Unit-I: e-Commerce Framework: Traditional vs. e-Business Applications - Anatomy of e-Commerce Applications – Present day trends.

Unit-II: Network Infrastructure of e-Commerce: Components of the I-way - Global information distribution networks - Public policy issues - Internet as a network infrastructure - Business of the internet commercialization.

Unit-III: Network Security: Client server network security - Firewalls and Network security - data and message security - Encrypted documents and Electronic mail.

Unit-IV: Electronic Commerce and World Wide Web: Consumer oriented E-commerce, Electronic payment systems, Electronic data interchange (EDI), EDI applications in business, EDI and E-commerce EDI implementation.

Unit-V: Intra-organizational e-Commerce: e-Commerce catalogs, Document Management and Digital libraries – Managing Supply Chain through e-Platform.

Reference:

1. R. Kalakota and A. B. Whinston, Frontiers of Electronic Commerce, Addison Wesley.

2. David Kosiur, Understanding Electronic Commerce, Microsoft Press.

3. Soka, From EDI to Electronic Commerce, McGraw Hill.

4. Saily Chan, Electronic Commerce Management, John Wiley.

DSC G 6.6 Enterprise Resource Planning

Unit-I: Enterprise Resource Planning: Applications - Business function and Business process – Development of ERP system SAP R/3 – New directions in ERP.

Unit-II: Production and Supply chain Management: Production Function – Production planning process – SAP ERP Approach to Production planning – Material requirement planning in SAP ERP – ERP and Supplier.

Unit -III: Marketing Information System and ERP: Sales and Distribution in ERP –Pre-sales activities – Sales order processing – Inventory Sourcing - Billing – Payment – Customer relationship Management.

Unit –IV: Accounting in ERP: ERP for Accounting Information – Industrial Credit Management in SAP ERP – Management Reporting with ERP system.

Unit – V: Human Resource Process in ERP: HR with ERP – Advance HR features – Time Management – ERP Recruitment process Modeling - Payroll – Training and Development – Case Studies.

References:

1. Ellen En Monk and Bret Wagner, Enterprise Resource Planning, McGraw Hill.

2. Alexis Leon, ERP Demystified, Tata McGraw Hill, New Delhi.

3. Joseph A Brady, Ellen F Monk, Bret Wagner, Concepts in Enterprise Resource Planning, Thompson Course Technology, USA.

4. Vinod Kumar Garg & Venkitakrishnan N K, Enterprise Resource Planning: Concepts and Practice, PHI, New Delhi.

6.7: Project work

Andhra Pradesh State Council of Higher Education

B.Sc. Chemistry Syllabus under CBCS

w.e.f. 2015-16 (revised in April 2016)

Structure of Chemistry Syllabus Under CBCS

YEAR	SEMESTER	PAPER	TITLE	MARKS	CREDITS
I	I	I	Inorganic and Organic Chemistry	100	03
			Practical – I	50	02
	II	II	Physical and General Chemistry	100	03
			Practical – II	50	02
II	III	III	Inorganic and organic Chemistry	100	03
			Practical – III	50	02
	IV	IV	Spectroscopy and Physical Chemistry	100	03
			Practical – IV	50	02
III	V	V	Inorganic ,Organic and Physical Chemistry	100	03
			Practical – V	50	02
		VI	Inorganic ,Organic and Physical Chemistry	100	03
			Practical – VI	50	02
	* Any one Paper from VII A, B and C ** Any one cluster from VIII, A, B and C VI	VII (A)*	Elective	100	03
			Practical - VII A	50	02
		VII (B)*	Elective	100	03
			Practical - VII B	50	02
		VII (C)*	Elective	100	03
			Practical - VII C	50	02
		VIII (A)**	**Cluster Electives - I :** VIII-A-1 VIII-A-2 VIII-A-3	100 100 100 50 50 50	03 03 03 02 02 02
		VIII (B)**	**Cluster Electives - II ::** VIII-B-1 VIII- B-2 VIII-B-3	100 100 100 50 50 50	03 03 03 02 02 02

		VIII (C)**	**Cluster Electives - III ::** VIII-C-1 VIII-C-2 VIII-C-3	100 100 100 50 50 50	03 03 03 02 02 02

SEMESTER – I

Paper I - Inorganic & Organic Chemistry 60hrs (4h/w)

INORGANIC CHEMISTRY **30 hrs (2h / w)**

UNIT –I

p-block elements –I **15h**

Group-13: Synthesis and structure of diborane and higher boranes (B_4H_{10} and B_5H_9**),** boron-nitrogen compounds ($B_3N_3H_6$ and BN)

Group - 14: Preparation and applications of silanes and silicones.

Group - 15: Preparation and reactions of hydrazine, hydroxylamine.

UNIT-II

1. **p-block elements -II** **8h**

Group - 16: Classifications of oxides based on (i) Chemical behaviour and (ii) Oxygen content.

Group-17: Inter halogen compounds and pseudo halogens.

2. Organometallic Chemistry **7h**

Definition - classification of Organometallic compounds - nomenclature, preparation, properties and applications of alkyls of Li and Mg.

ORGANIC CHEMISTRY **30hrs (2h /w)**

UNIT-III

Structural theory in Organic Chemistry **10 h**

Types of bond fission and organic reagents (Electrophilic, Nucleophilic, and free radical reagents including neutral molecules like H_2O,NH_3& $AlCl_3$).

Bond polarization : Factors influencing the polarization of covalent bonds, electro negativity - inductive effect. Application of inductive effect (a) Basicity of amines (b) Acidity of carboxylic acids (c) Stability of carbonium ions. Resonance or Mesomeric effect, application to (a) acidity of phenol, and (b) acidity of carboxylic acids. Hyper conjugation and its application to stability of carbonium ions, Free radicals and alkenes, carbanions, carbenes and nitrenes.

Types of Organic reactions : Addition - electrophilic, nucleophilic and free radical. Substitution - electrophilic, nucleophilic and free radical. Elimination- Examples.

UNIT-IV

l. **Acyclic Hydrocarbons** **6 h**

Alkenes - Preparation of alkenes. Properties: Addition of hydrogen - heat of hydrogenation and stability of alkenes. Addition of halogen and its mechanism. Addition of HX, Markonikov's rule, addition of H_2O, HOX, H_2SO_4 with mechanism and addition of HBr in the presence of peroxide (anti - Markonikov's addition). Dienes - Types of dienes, reactions of conjugated dienes - 1,2 and 1,4 addition of HBr to 1,3 - butadiene and Diel's - Alder reaction.

Alkynes - Preparation by dehydrohalogenation of dihalides, dehalogenation of tetrahalides, Properties; Acidity of acetylenic hydrogen (formation of Metal acetylides). Preparation of higher acetylenes, Metal ammonia reductions, Physical properties. Chemical reactivity - electrophilic addition of X_2, HX, H_2O (Tautomerism), Oxidation with $KMnO_4$, OsO_4, reduction and Polymerisation reaction of acetylene.

2. **Alicyclic hydrocarbons (Cycloalkanes)** **4 h**

Nomenclature, Preparation by Freunds method, Wislicenus method. Properties - reactivity of cyclopropane and cyclobutane by comparing with alkanes, Stability of cycloalkanes - Baeyer's strain theory, Sachse and Mohr predictions and Pitzer's strain theory. Conformational structures of cyclobutane, cyclopentane, cyclohexane.

UNIT-V

Benzene and its reactivity **10h**

Concept of resonance, resonance energy. Heat of hydrogenation, heat of combustion of Benzene, mention of C-C bond lengths and orbital picture of Benzene. Concept of aromaticity - aromaticity (definition), Huckel's rule - application to Benzenoid (Benzene, Naphthalene) and Non - Benzenoid compounds (cyclopropenyl cation, cyclopentadienyl anion and tropylium cation)

Reactions - General mechanism of electrophilic substitution, mechanism of nitration, Friedel Craft's alkylation and acylation. Orientation of aromatic substitution - Definition of ortho, para and meta directing groups. Ring activating and deactivating groups with examples (Electronic interpretation of various groups like NO_2 and Phenolic). Orientation of (i) Amino, methoxy and methyl groups (ii) Carboxy, nitro, nitrile, carbonyl and sulphonic acid groups (iii) Halogens

(Explanation by taking minimum of one example from each type)

List of Reference Books

1. Inorganic Chemistry by J.E.Huheey
2. Basic Inorganic Chemistry by Cotton and Wilkinson

3.A textbook of qualitative inorganic analysis by A.I. Vogel
4. Organic Chemistry by Morrisson and Boyd
5. A Text Book of Organic chemistry by I L Finar Vol I
6. Concise Inorganic Chemistry by J.D.Lee

LABORATORY COURSE-I **30** hrs (2 h / w)

Practical-I Simple Salt Analysis

(At the end of Semester-I)

Qualitative inorganic analysis

Analysis of simple salt containing one anion and cation from the following

Anions: Carbonate, sulphate, chloride, bromide, acetate, nitrate, borate, phosphate.

cations: Lead, copper, iron, aluminum, zinc, manganese, nickel, calcium, strontium, barium, potassium and ammonium.

SEMESTER - II

Paper II (Physical & General Chemistry) 60 hrs. (4h/w)

PHYSICAL CHEMISTRY 30 hrs (2h / w)

UNIT-I

Solidstate l0h

Symmetry in crystals. Law of constancy of interfacial angles. The law of rationality of indices. The law of symmetry. Definition of lattice point, space lattice, unit cell. Bravis lattices and crystal systems. X-ray diffraction and crystal structure. Bragg's law. Defects in crystals. Stoichiometric and non-stoichiometric defects.

UNIT-II

1.Gaseous state 6 h

Compression factors, deviation of real gases from ideal behavior. Vander Waal's equation of state. P-V Isotherms of real gases, Andrew's isotherms of carbon dioxide, continuity of state. Critical phenomena. The vander Waal's equation and the critical state. Law of corresponding states.Relationship between critical constants and vander Waal's constants. Joule Thomson effect.

2.Liquid state 4 h

Structural differences between solids, liquids and gases. Liquid crystals, the mesomorphic state. Classification of liquid crystals into Smectic and Nematic. Differences between liquid crystal and solid/liquid. Application of liquid crystals as LCD devices.

UNIT-III

Solutions l0h

Liquid-liquid - ideal solutions, Raoult's law. Ideally dilute solutions, Henry's law. Non-ideal solutions. Vapour pressure - composition and vapour pressure- temperature curves. Azeotropes-HCl-H_2O, ethanol-water systems and fractional distillation. Partially miscible liquids-phenol-water, trimethylamine-water, nicotine-water systems. Effect of impurity on consulate temperature. Immiscible liquids and steam distillation.

Nernst distribution law. Calculation of the partition coefficient. Applications of distribution law.

GENERAL CHEMISTRY 30 hrs (2h / w)

UNIT-IV

l.Surface chemistry 8 h

Definition of colloids. Solids in liquids(sols), preparation, purification, properties - kinetic, optical, electrical. Stability of colloids, Hardy-Schulze law, protective colloid.

Liquids in liquids (emulsions) preparation, properties, uses. Liquids in solids (gels) preparation, uses.

Adsorption: Physical adsorption, chemisorption. Freundlisch, Langmuir adsorption isotherms. Applications of adsorption

2.Chemical Bonding **7h**

Valence bond theory, hybridization, VB theory as applied toClF_3**,** $Ni(CO)_4$**,** Molecular orbital theory - LCAO method, construction of M.O. diagrams for homo-nuclear and hetero-nuclear diatomic molecules (N_2, O_2, CO and NO).

UNIT-V

Stereochemistry of carbon compounds **15 h**

Molecular representations- Wedge, Fischer, Newman and Saw-Horse formulae.

Optical isomerism: Optical activity- wave nature of light, plane polarised light, optical rotation and specific rotation.

Chiral molecules- definition and criteria(Symmetry elements)- Definition of enantiomers and diastereomers – Explanation of optical isomerism with examples Glyceraldehyde, Lactic acid, Alanine, Tartaric acid, 2,3-dibromopentane.

D,L and R,S configuration methods and E,Z- configuration with examples.

List of Reference Books

1. Principles of physical chemistry by Prutton and Marron
2. Solid State Chemistry and its applications by Anthony R. West
3. Text book of physical chemistry by K L Kapoor
4. Text book of physical chemistry by S Glasstone
5. Stereochemistry of Organic compounds by E L Eliel
6. Advanced Organic Chemistry by F A Carey and R J Sundberg
7. Stereochemistry by P.S.Kalsi
8. Stereochemistry of Organic compounds by D. Nasipuri
9. Advanced physical chemistry by Bahl and Tuli
10. Advanced Inorganic Chemistry Vol-I by Satyaprakash, Tuli, Basu and Madan

LABORATORY COURSE -II **30** hrs (2 h / w)

Practical-II Analysis of Mixture Salt

(At the end of Semester-II)

Qualitative inorganic analysis

Analysis of mixture salt containing two anions and two cations (From two different groups) from the following:

Anions: Carbonate, sulphate, chloride, bromide, acetate, nitrate, borate, phosphate.

Cations: Lead, copper, iron, aluminum, zinc, manganese, calcium, strontium, barium, potassium and ammonium.

SEMESTER - III
Paper III (INORGANIC & ORGANIC CHEMISTRY) 60 hrs (4 h / w)

INORGANIC CHEMISTRY 30 hrs (2h / w)

UNIT –I

1. Chemistry of d-block elements: 9h

Characteristics of d-block elements with special reference to electronic configuration, variable valence, magnetic properties, catalytic properties and ability to form complexes. Stability of various oxidation states

2. Theories of bonding in metals:

6h

Metallic properties and its limitations, Valence bond theory, Free electron theory, Explanation of thermal and electrical conductivity of metals, limitations, Band theory, formation of bands, explanation of conductors, semiconductors and insulators.

UNIT – II

3.Metal carbonyls : 7h

EAN rule, classification of metal carbonyls, structures and shapes of metal carbonyls of V, Cr, Mn, Fe, Co and Ni.

4. Chemistry of f-block elements: 8h

Chemistry of lanthanides - electronic structure, oxidation states, lanthanide contraction, consequences of lanthanide contraction, magnetic properties. Chemistry of actinides - electronic configuration, oxidation states, actinide contraction, comparison of lanthanides and actinides.

ORGANIC CHEMISTRY 30 h (2h/w)

UNIT – III

1. Halogen compounds 5 h

Nomenclature and classification of alkyl (into primary, secondary, tertiary), aryl, aryl alkyl, allyl, vinyl, benzyl halides.

Nucleophilic aliphatic substitution reaction- classification intoSN^1 andSN^2 – reaction mechanism with examples – Ethyl chloride, t-butyl chloride and optically active alkyl halide 2-bromobutane.

2. **Hydroxy compounds** **5 h**

Nomenclature and classification of hydroxy compounds.
Alcohols: Preparation with hydroboration reaction, Grignard synthesis of alcohols. Phenols: Preparation i) from diazonium salt, ii) from aryl sulphonates, iii) from cumene. Physical properties- Hydrogen bonding (intermolecular and intramolecular). Effect of hydrogen bonding on boiling point and solubility in water.
Identification of alcohols by oxidation with $KMnO_4$, Ceric ammonium nitrate, Luca's reagent and phenols by reaction with $FeCl_3$.
Chemical properties:

a) Dehydration of alcohols.
b) Oxidation of alcohols by CrO_3, $KMnO_4$.
c) Special reaction of phenols: Bromination, Kolbe-Schmidt reaction, Riemer-Tiemann reaction, Fries rearrangement, azocoupling, Pinacol-Pinacolone rearrangement.

UNIT-IV

Carbonyl compounds **10 h**

Nomenclature of aliphatic and aromatic carbonyl compounds, structure of the carbonyl group. Synthesis of aldehydes from acid chlorides, synthesis of aldehydes and ketones using 1,3-dithianes, synthesis of ketones from nitriles and from carboxylic acids. Physical properties: Reactivity of carbonyl group in aldehydes and ketones.
Nucleophilic addition reaction with a) $NaHSO_3$, b) HCN, c) RMgX, d) NH_2OH, e)$PhNHNH_2$, f) 2,4 DNPH, g) Alcohols-formation of hemiacetal and acetal. Base catalysed reactions: a) Aldol, b) Cannizzaro's reaction, c) Perkin reaction, d) Benzoin condensation, e) Haloform reaction, f) Knoevenagel reaction. Oxidation of aldehydes-Baeyer-Villiger oxidation of ketones.Reduction: Clemmensen reduction, Wolf-Kishner reduction, MPV reduction, reduction with $LiAlH_4$ and $NaBH_4$. Analysis of aldehydes and ketones with a) 2,4-DNPH test, b) Tollen's test, c) Fehling test, d) Schiff's test e) Haloform test (with equation)

UNIT-V

1. Carboxylic acids and derivatives **6 h**

Nomenclature, classification and structure of carboxylic acids. Methods of preparation by a) Hydrolysis of nitriles, amides b) Hydrolysis of esters by acids and bases with mechanism c) Carbonation of Grignard reagents. Special methods of preparation of aromatic acids by a) Oxidation of side chain. b) Hydrolysis by benzotrichlorides. c) Kolbe reaction. **Physical properties**: Hydrogen bonding, dimeric association, acidity-strength of acids with examples of trimethyl acetic acid and trichloroacetic acid. Relative differences in the acidities of aromatic and aliphatic acids. **Chemical properties**: Reactions involving H, OH and COOH groups- salt formation, anhydride formation, acid chloride formation, amide formation and esterification (mechanism). Degradation of carboxylic acids by Huns-Diecker reaction, decarboxylation by Schimdt reaction, Arndt-Eistert synthesis, halogenation by Hell- Volhard- Zelinsky reaction.

2. Active methylene compounds **4 h**

Acetoacetic ester: keto-enol tautomerism, preparation by Claisen condensation, Acid hydrolysis and ketonic hydrolysis. Preparation of a) monocarboxylic acids. b) Dicarboxylic acids. c) Reaction with urea

Malonic ester: preparation from acetic acid. **Synthetic applications**: Preparation of a) monocarboxylic acids (propionic acid and n-butyric acid). b) Dicarboxylic acids (succinic acid and adipic acid) c) α,β-unsaturated carboxylic acids (crotonic acid).
d) Reaction with urea.

List of Reference Books

1. Selected topics in inorganic chemistry by W.D.Malik, G..D.Tuli,R.D.Madan
2. Inorganic Chemistry J E Huheey, E A Keiter and R L Keiter
3. A Text Book of Organic Chemistry by Bahl and Arun bahl
4. A Text Book of Organic chemistry by I L Finar Vol I
5. Organic chemistry by Bruice
6. Organic chemistry by Clayden
7. Advanced Inorganic chemistry by Gurudeep Raj
8. Basic Inorganic Chemistry by Cotton and Wilkinson
9. Concise Inorganic Chemistry by J.D.Lee

LABORATORY COURSE -III **30 hrs. (2 h / w)**

Practical Paper-III Titrimetric analysis and **Organic Functional Group Reactions**
(At the end of Semester-III)

Titrimetric analysis: **25M**

1. Determination of Fe (II) using $KMnO_4$ with oxalic acid as primary standard.
2. Determination of Cu(II) using $Na_2S_2O_3$ with $K_2Cr_2O_7$ as primary standard.

Organic Functional Group Reactions **25M**

3. Reactions of the following functional groups present in organic compounds (at least four) Alcohols, Phenols, Aldehydes, Ketones, Carboxylic acids and Amides

SEMESTER IV
Paper IV (SPECTROSCOPY & PHYSICAL CHEMISTRY)
60 hrs (4 h / w)

SPECTROSCOPY 30 hrs (2h / w)

UNIT-I 6h

General features of absorption - Beer-Lambert's law and its limitations, transmittance, Absorbance, and molar absorptivity. Single and double beam spectrophotometers. Application of Beer-Lambert law for quantitative analysis of 1. Chromium in $K_2Cr_2O_7$
2. Manganese in Manganous sulphate

Electronic spectroscopy: 8h

Interaction of electromagnetic radiation with molecules and types of molecular spectra. Energy levels of molecular orbitals (σ, π, n). Selection rules for electronic spectra. Types of electronic transitions in molecules effect of conjugation. Concept of chromophore and auxochrome.

UNIT-II

Infra red spectroscopy 8h

Different Regions in Infrared radiations. Modes of vibrations in diatomic and polyatomic molecules. Characteristic absorption bands of various functional groups. Interpretation of spectra-Alkanes, Aromatic, Alcohols carbonyls, and amines with one example to each.

Proton magnetic resonance spectroscopy (^{1}H-NMR) 8h

Principles of nuclear magnetic resonance, equivalent and non-equivalent protons, position of signals. Chemical shift, NMR splitting of signals - spin-spin coupling, coupling constants. Applications of NMR with suitable examples - ethyl bromide, ethanol, acetaldehyde, 1,1,2-tribromo ethane, ethyl acetate, toluene and acetophenone.

PHYSICAL CHEMISTRY 30 hrs (2h / w)

UNIT-III

Dilute solutions 10h

Colligative properties. Raoult's law, relative lowering of vapour pressure, its relation to molecular weight of non-volatile solute. Elevation of boiling point and depression of freezing point. Derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods of determination. Osmosis, osmotic pressure, experimental determination. Theory of dilute solutions. Determination of molecular weight of non-volatile solute from osmotic pressure. Abnormal Colligative properties- Van’t Hoff factor.

UNIT-IV

Electrochemistry-I **10h**

Specific conductance, equivalent conductance. Variation of equivalent conductance with dilution. Migration of ions, Kohlrausch's law. Arrhenius theory of electrolyte dissociation and its limitations. Ostwald's dilution law. Debye-Huckel-Onsagar's equation for strong electrolytes (elementary treatment only). Definition of transport number, determination by Hittorfs method. Application of conductivity measurements- conductometric titrations.

UNIT-V

1. Electrochemistry-II **4h**

Single electrode potential, sign convention, Reversible and irreversible cells Nernst Equation- Reference electrode, Standard Hydrogen electrode, calomel electrode, Indicator electrode, metal – metal ion electrode, Inert electrode, Determination of EMF of cell, Applications of EMF measurements - Potentiometric titrations.

2.Phase rule **6h**

Concept of phase, components, degrees of freedom. Thermodynamic Derivation of Gibbs phase rule. Phase equilibrium of one component system - water system. Phase equilibrium of two- component system, solid-liquid equilibrium. Simple eutectic diagram of Pb-Ag system, simple eutectic diagram, desilverisation of lead., NaCl-Water system, Freezing mixtures.

List of Reference Books

1. Spectroscopy by William Kemp

2. Spectroscopy by Pavia

3. Organic Spectroscopy by J. R. Dyer

4. Modern Electrochemistry by J.O. M. Bockris and A.K.N.Reddy

5. Advanced Physical Chemistry by Atkins

6.Introduction to Electrochemistry by S. Glasstone

7.Elementary organic spectroscopy by Y.R. Sharma

8. Spectroscopy by P.S.Kalsi

LABORATORY COURSE – IV
Practical Paper - IV Physical Chemisry and IR Spectral Analysis
(at the end of semester IV)

30 hrs (2 h / W)

Physical Chemistry **25M**

1.Critical Solution Temperature- Phenol-Water system

2. Effect of NaCl on critical solution temperature (Phenol-Water system)

3.Determination of concentration of HCl conductometrically using standard NaOH solution.

4.Determination of concentration of acetic acid conductometrically using standard NaOH Solution.

IR Spectral Analysis **25 M**

5. IR Spectral Analysis of the following functional groups with examples

a) Hydroxyl groups

b) Carbonyl groups

c) Amino groups

d) Aromatic groups

SEMESTER-V

Paper - V (INORGANIC, PHYSICAL & ORGANIC CHEMISTRY)
45 hrs (3 h / w)

INORGANIC CHEMISTRY

UNIT – I

Coordination Chemistry: 8h

IUPAC nomenclature - bonding theories - Review of Werner's theory and Sidgwick's concept of coordination - Valence bond theory - geometries of coordination numbers 4-tetrahedral and square planar and 6-octahedral and its limitations, crystal filed theory - splitting of d-orbitals in octahedral, tetrahedral and square-planar complexes - low spin and high spin complexes - factors affecting crystal-field splitting energy, merits and demerits of crystal-field theory. Isomerism in coordination compounds - structural isomerism and stereo isomerism, stereochemistry of complexes with 4 and 6 coordination numbers.

UNIT-II

1. Spectral and magnetic properties of metal complexes: 4h

Types of magnetic behavior, spin-only formula, calculation of magnetic moments, experimental determination of magnetic susceptibility-Gouymethod.

2. Stability of metal complexes: 3h

Thermodynamic stability and kinetic stability, factors affecting the stability of metal complexes, chelate effect, determination of composition of complex by Job's method and mole ratio method.

ORGANIC CHEMISTRY

UNIT- III

Nitro hydrocarbons: **3h**

Nomenclature and classification-nitro hydrocarbons, structure -Tautomerism of nitroalkanes leading to aci and keto form, Preparation of Nitroalkanes, reactivity -halogenation, reaction with HONO (Nitrous acid),Nef reaction and Mannich reaction leading to Micheal addition and reduction.

UNIT – IV

Nitrogen compounds: 12h

Amines (Aliphatic and Aromatic): Nomenclature, Classification into 1°, 2°, 3° Amines and Quarternary ammonium compounds. Preparative methods –

1. Ammonolysis of alkyl halides 2. Gabriel synthesis 3. Hoffman's bromamide reaction (mechanism).

Reduction of Amides and Schmidt reaction. Physical properties and basic character - Comparative basic strength of Ammonia, methyl amine, dimethyl amine, trimethyl amine and aniline - comparative basic strength of aniline, N-methylaniline and N,N-dimethyl aniline (in aqueous and non-aqueous medium), steric effects and substituent effects.

Chemical properties: a) Alkylation b) Acylation c) Carbylamine reaction d) Hinsberg separation e) Reaction with Nitrous acid of 1°, 2°, 3° (Aliphatic and aromatic amines). Electrophillic substitution of Aromatic amines – Bromination and Nitration. Oxidation of aryl and Tertiary amines, Diazotization.

PHYSICAL CHEMISTRY

UNIT- V

Thermodynamics **15h**

The first law of thermodynamics-statement, definition of internal energy and enthalpy. Heat capacities and their relationship. Joule-Thomson effect- coefficient. Calculation of w, for the expansion of perfect gas under isothermal and adiabatic conditions for reversible processes. State function. Temperature dependence of enthalpy of formation-Kirchoff s equation. Second law of thermodynamics. Different Statements of the law. Carnot cycle and its efficiency. Carnot theorem. Concept of entropy, entropy as a state function, entropy changes in reversible and irreversible processes. Entropy changes in spontaneous and equilibrium processes.

List of Reference Books

1. Concise coordination chemistry by Gopalan and Ramalingam
2. Coordination Chemistry by Basalo and Johnson
3. Organic Chemistry by G.Mare loudan, Purdue Univ
4. Advanced Physical Chemistry by
5.Text book of physical chemistry by S Glasstone
6.Concise Inorganic Chemistry by J.D.Lee
7. Advanced Inorganic Chemistry Vol-I by Satyaprakash, Tuli, Basu and Madan
8. A Text Book of Organic Chemistry by Bahl and Arun bahl
9.A Text Book of Organic chemistry by I L Finar Vol I
10.Advanced physical chemistry by Gurudeep Raj

SEMESTER-V

Paper - VI (INORGANIC, ORGANIC & PHYSICAL CHEMISTRY)

45 hrs (3 h / w)

INORGANIC CHEMISTRY

UNIT-I

1. Reactivity of metal complexes: 4h

Labile and inert complexes, ligand substitution reactions - SN^1 and SN^2,substitution reactions of square planar complexes - Trans effect and applications of trans effect.

2.Bioinorganic chemistry: 4h

Essential elements, biological significance of Na, K, Mg, Ca, Fe, Co, Ni, Cu, Zn and Cl^-. Metalloporphyrins – Structure and functions of hemoglobin, Myoglobin and Chlorophyll.

PHYSICAL CHEMISTRY

UNIT-II

1. Chemical kinetics 8h

Rate of reaction - Definition of order and molecularity. Derivation of rate constants for first, second, third and zero order reactions and examples. Derivation for time half change. Methods to determine the order of reactions. Effect of temperature on rate of reaction, Arrhenius equation, concept of activation energy.

2. Photochemistry 5h

Difference between thermal and photochemical processes. Laws of photochemistry-Grothus-Draper's law and Stark-Einstein's law of photochemical equivalence. Quantum yield-Photochemical reaction mechanism- hydrogen- chlorine, hydrogen- bromine reaction. Qualitative description of fluorescence, phosphorescence, Photosensitized reactions- energy transfer processes (simple example)

ORGANIC CHEMISTRY

UNIT- III

Heterocyclic Compounds 7h

Introduction and definition: Simple five membered ring compounds with one hetero atom Ex. Furan. Thiophene and pyrrole - Aromatic character – Preparation from 1,4,-dicarbonyl compounds, Paul-Knorr synthesis.

Properties : Acidic character of pyrrole - electrophillic substitution at 2 or 5 position, Halogenation, Nitration and Sulphonation under mild conditions - Diels Alder reaction in furan.

Pyridine – Structure - Basicity - Aromaticity - Comparison with pyrrole - one method of preparation and properties - Reactivity towards Nucleophilic substitution reaction.

UNIT-IV

Carbohydrates **8h**

Monosaccharides: (+) Glucose (aldo hexose) - Evidence for cyclic structure of glucose (some negative aldehydes tests and mutarotation) - Proof for the ring size (methylation, hydrolysis and oxidation reactions) - Pyranose structure (Haworth formula and chair conformational formula).

(-) Fructose (ketohexose) - Evidence of 2 - ketohexose structure (formation of pentaacetate, formation of cyanohydrin its hydrolysis and reduction by HI). Cyclic structure for fructose (Furanose structure and Haworth formula) - osazone formation from glucose and fructose – Definition of anomers with examples.

Interconversion of Monosaccharides: Aldopentose to Aldohexose (Arabinose to D- Glucose, D-Mannose) (Kiliani - Fischer method). Epimers, Epimerisation - Lobry de bruyn van Ekenstein rearrangement. Aldohexose to Aldopentose (D-Glucose to D- Arabinose) by Ruff degradation. Aldohexose to Ketohexose [(+) Glucose to (-) Fructose] and Ketohexose to Aldohexose (Fructose to Glucose)

UNIT- V

Amino acids and proteins **7h**

Introduction: Definition of Amino acids, classification of Amino acids into alpha, beta, and gamma amino acids. Natural and essential amino acids - definition and examples, classification of alpha amino acids into acidic, basic and neutral amino acids with examples. Methods of synthesis: General methods of synthesis of alpha amino acids (specific examples - Glycine, Alanine, valine and leucine) by following methods: a) from halogenated carboxylic acid b) Malonic ester synthesis c) strecker's synthesis.

Physical properties: Zwitter ion structure - salt like character - solubility, melting points, amphoteric character, definition of isoelectric point.

Chemical properties: General reactions due to amino and carboxyl groups - lactams from gamma and delta amino acids by heating peptide bond (amide linkage). Structure and nomenclature of peptides and proteins.

List of Reference Books

1. Concise coordination chemistry by Gopalan and Ramalingam
2. Coordination Chemistry by Basalo and Johnson
3. Organic Chemistry by G.Mare loudan, Purdue Univ
4. Advanced Physical Chemistry by Atkins
5. Text book of physical chemistry by S Glasstone
7. Instrumentation and Techniques by Chatwal and Anand
8. Essentials of nano chemistry by pradeep
9. A Textbook of Physical Chemistry by Puri and Sharma

10. Advanced physical chemistry by Gurudeep Raj

LABORATORY COURSE – V
Practical Paper – V Organic Chemistry
(at the end of semester V) 30 hrs (2 h / W)

Organic Qualitative Analysis: 50M

Analysis of an organic compound through systematic qualitative procedure for functional group identification including the determination of melting point and boiling point with suitable derivatives.

Alcohols, Phenols, Aldehydes, Ketones, Carboxylic acids, Aromatic Primary Amines, Amides and Simple sugars.

LABORATORY COURSE – VI
Practical Paper – VI Physical Chemistry
(at the end of semester V) 30 hrs (2 h/W)

1. Determination of rate constant for acid catalyzed ester hydrolysis.

2. Determination of molecular status and partition coefficient of benzoicacid in Benzene and water.

3. Determination of Surface tension of liquid

4. Determination of Viscosity of liquid.

5. Adsorption of acetic acid on animal charcoal, verification of Freundlisch isotherm.

SEMESTER-VI - Electives

ELECTIVE Paper – VII-(A) : ANALYTICAL METHODS IN CHEMISTRY **45hrs (3h / w)**

UNIT-I

Quantitative analysis: **10h**

a) Importance in various fields of science, steps involved in chemical analysis**.** Principles of volumetric analysis :. Theories of acid-base, redox, complexometric, iodometric and precipitation titrations - choice of indicators for these titrations.

b) Principles of gravimetric analysis: precipitation, coagulation, peptization, coprecipitation, post precipitation, digestion, filtration and washing of precipitate, drying and ignition.

UNIT-II

Treatment of analytical data: **7h**

Types of errors, significant figures and its importance, accuracy - methods of expressing accuracy, error analysis and minimization of errors, precision - methods of expressing precision, standard deviation and confidence limit.

UNIT-III

SEPARATION TECHNIQUES IN CHEMICAL ANALYSIS: **8h**

SOLVENT EXTRACTION : Introduction,principle,techniques,factors affecting solvent extraction, Batch extraction, continuous extraction and counter current extraction. Synergism., Application - Determination of Iron (III)

ION EXCHANGE :Introduction,action of ion exchange resins,separation of inorganic mixtuers,applications, Solvent extraction: Principle and process,

UNIT – IV **10h**

Chromatography: Classification of chromatography methods, principles of differential migration adsorption phenomenon, Nature of adsorbents, solvent systems, R_f values, factors effecting R_f values.

Paper Chromatography: Principles, R_f values, experimental procedures, choice of paper and solvent systems, developments of chromatogram - ascending, descending and radial. Two dimensional chromatography, applications.

UNIT -V **10h**

Thin layer Chromatography (TLC): Advantages. Principles, factors effecting R_f values. Experimental procedures. Adsorbents and solvents. Preparation of plates. Development of the chromatogram. Detection of the spots. Applications.

Column Chromatography: Principles, experimental procedures, Stationary and mobile Phases, Separation technique. Applications

HPLC : Basic principles and applications.

List of Reference Books

1. Analytical Chemistry by Skoog and Miller
2. A textbook of qualitative inorganic analysis by A.I. Vogel
3. Nanochemistry by Geoffrey Ozin and Andre Arsenault
4. Stereochemistry by D. Nasipuri
5. Organic Chemistry by Clayden

LABORATORY COURSE – VI

Practical Paper – VII-(A) (at the end of semester VI) 30hrs (2 h / W)

50M

1. Identification of aminoacids by paper chromatography.
2. Determination of Zn using EDTA
3. Determination of Mg using EDTA

SEMESTER-VI

ELECTIVE PAPER – VII-(B) : ENVIRONMENTAL CHEMISTRY

45 hrs (3 h / w)

UNIT-I

Introduction **9h**

Concept of Environmental chemistry-Scope and importance of environment in now adays – Nomenclature of environmental chemistry – Segments of environment - Natural resources – Renewable Resources – Solar and biomass energy and Nonrenewable resources – Thermal power and atomic energy – Reactions of atmospheric oxygen and Hydological cycle.

UNIT-II

Air Pollution **9h**

Definition – Sources of air pollution – Classification of air pollution – Acid rain – Photochemical smog – Green house effect – Formation and depletion of ozone – Bhopal gas disaster – Controlling methods of air pollution.

UNIT-III

Water pollution **9h**

Unique physical and chemical properties of water – water quality and criteria for finding of water quality – Dissolved oxygen – BOD, COD, Suspended solids, total dissolved solids, alkalinity – Hardness of water – Methods to convert temporary hard water into soft water – Methods to convert permanent hard water into soft water – eutrophication and its effects – principal wastage treatment – Industrial waste water treatment.

UNIT-IV

Chemical Toxicology **9h**

Toxic chemicals in the environment – effects of toxic chemicals – cyanide and its toxic effects – pesticides and its biochemical effects – toxicity of lead, mercury, arsenic and cadmium.

UNIT-V

Ecosystem and biodiversity

9h

Ecosystem

Concepts – structure – Functions and types of ecosystem – Abiotic and biotic components – Energy flow and Energy dynamics of ecosystem – Food chains – Food web – Tropic levels – Biogeochemical cycles (carbon, nitrogen and phosporus)

Biodiversity

Definition – level and types of biodiversity – concept - significance – magnitude and distribution of biodiversity – trends - biogeographical classification of india – biodiversity at national, global and regional level.

List of Reference books

1. Fundamentals of ecology by M.C.Dash

2. A Text book of Environmental chemistry by W. Moore and F.A. Moore

3. Environmental Chemistry by Samir k. Banerji

LABORATORY COURSE – VI

Practical Paper – Elective VII B (at the end of semester VI) 30 hrs (2 h / W)

1.Determination of carbonate and bicarbonate in water samples (acidity and alkalinity)

2. Determination of hardness of water using EDTA

   a) Permanent hardness

   b) Temporary hardness

3. Determination of Acidity

4. Determination of Alkalinity

5. Determination of chlorides in water samples

SEMESTER-VI

ELECTIVE PAPER – VII-(C) GREEN CHEMISTRY

45 hrs (3 h / w)

UNIT-I **10h**

Green Chemistry: Introduction- Definition of green Chemistry, need of green chemistry, basic principles of green chemistry. Green synthesis- Evalution of the type of the reaction i) Rearrangements (100% atom economic), ii) Addition reaction (100% atom economic). Organic reactions by Sonication method: apparatus required examples of sonochemical reactions (Heck, Hundsdiecker and Wittig reactions).

UNIT-II **10h**

Selection of solvent:i) Aqueous phase reactions ii) Reactions in ionic liquids, Heckreaction, Suzuki reactions, epoxidation. iii) Solid supported synthesis

Super critical CO_2: Preparation, properties and applications, (decaffeination, dry cleaning)

UNIT-III **10h**

Microwave and Ultrasound assisted green synthesis: Apparatus required, examples of MAOS (synthesis of fused anthro quinones, Leukart reductive amination of ketones) - Advantages and disadvantages of MAOS. Aldol condensation-Cannizzaro reaction-Diels-Alder reactions-Strecker's synthesis

UNIT-IV **5h**

Green catalysis: Heterogeneous catalysis, use of zeolites, silica, alumina, supported catalysis- biocatalysis: Enzymes, microbes Phase transfer catalysis (micellar/surfactant)

UNIT V **10h**

Examples of green synthesis / reactions and some real world cases: 1. Green synthesis of the following compounds: adipic acid , catechol , disodium imino di acetate (alternative Strecker's synthesis) 2. Microwave assisted reaction in water – Hoffmann elimination – methyl benzoate to benzoic acid – oxidation of toluene and alcohols – microwave assisted reactions in organic solvents. Diels-Alder reactions and decarboxylation reaction. 3. Ultrasound assisted reactions – sonochemical Simmons –Smith reaction(ultrasonic alternative to iodine)

Reference books:

1. Green Chemistry Theory and Practice. P.T.Anatas and J.C. Warner
2. Green Chemistry V.K. Ahluwalia Narosa, New Delhi.
3. Real world cases in Green Chemistry M.C. Cann and M.E. Connelly
4. Green Chemistry: Introductory Text M.Lancaster: Royal Society of Chemistry (London)
5. Green Chemistry: Introductory Text, M.Lancaster
6. Principles and practice of heterogeneous catalysis, Thomas J.M.,Thomas M.J., John Wiley
7. Green Chemistry: Environmental friendly alternatives R S Sanghli and M.M Srivastava, Narosa Publications

LABORATORY COURSE – VII

Practical Paper – Elective VII C (at the end of semester VI) 30 hrs (2 h/W)

1. Determination of specific reaction rate of hydrolysis for methyl acetate catalysed by hydrogen ion at room temperature.

2. Determination of molecular status and partition coefficient of benzoicacidin Benzene and water.

3. Surface tension and viscosity of liquids.

4. Adsorption of acetic acid on animal charcoal, verification of Freundlisch isotherm.

CLUSTER ELECTIVES: Cluster Elective – I
Analytical and Physical
SEMESTER-VI
PAPER – VIII-A-1: POLYMER CHEMISTRY

45 hrs (3 h / w)

UNIT-I **12h**

Introduction of polymers:

Basic definitions, degree of polymerization ,classification of polymers- Natural and Synthetic polymers, Organic and Inorganic polymers, Thermoplastic and Thermosetting polymers, Plastics, Elastomers , Fibers and Resins, Linear ,Branched and Cross Linked polymers, Addition polymers and Condensation Polymers, mechanism of polymerization. Free radical, ionic and Zeigler – Natta polymerization.

UNIT-II **10h**

Techniques of Polymerization : Bulk polymerization , solution polymerization , suspension and Emulsion polymerization.

Molecular weights of polymers: Number average and weight average molecular weights Determination of molecular weight of polymers by Viscometry , Osmometry and light scattering methods.

UNIT-III **6h**

Kinetics of Free radical polymerization, Glass Transition temperature(Tg) and Determination of Tg:

Free volume theory, WLF equation, factors affecting glass transition temperature (Tg).

UNIT-IV **9h**

Polymer additives:

Introduction to plastic additives – fillers, Plasticizers and Softeners , Lubricants and Flow Promoters, Anti aging additives , Flame Retardants , Colourants , Blowing agents , Cross linking agents ,Photo stabilizers , Nucleating agents.

UNIT-V **8h**

Polymers and their applications:

Preparation and industrial applications of Polyethylene, Polyvinyl chloride, Teflon, Polyacrylonitrile, Terelene , Nylon6.6 silicones.

Reference Books:

1. Seymour, R.B. & Carraher, C.E. *Polymer Chemistry: An Introduction,* Marcel Dekker, Inc. New York, 1981.
2. Odian, G. *Principles of Polymerization*, 4th Ed. Wiley, 2004.
3. Billmeyer, F.W. *Textbook of Polymer Science*, 2nd Ed. Wiley Interscience, 1971.
4. Ghosh, P. *Polymer Science & Technology*, Tata McGraw-Hill Education, 1991.34
5. Lenz, R.W. *Organic Chemistry of Synthetic High Polymers.* Interscience Publishers, NewYork, 1967.

SEMESTER-VI

PAPER – VIII-A-2: INSTRUMENTAL METHODS OF ANALYSIS

45 hrs (3 h / w)

UNIT – I

Introduction to spectroscopic methods of analysis: 4 h

Recap of the spectroscopic methods covered in detail in the core chemistry syllabus: Treatment of analytical data, including error analysis. Classification of analytical methods and the types of instrumental methods. Consideration of electromagnetic radiation.

UNIT – II

Molecular spectroscopy: 8h

Infrared spectroscopy:

Interactions with molecules: absorption and scattering. Means of excitation (light sources), separation of spectrum (wavelength dispersion, time resolution), detection of the signal (heat, differential detection), interpretation of spectrum (qualitative, mixtures, resolution), advantages of Fourier Transform (FTIR). Samples and results expected. Applications: Issues of quality assurance and quality control, Special problems for portable instrumentation and rapid detection.

UNIT – III 10h

UV-Visible/ Near IR – emission, absorption, fluorescence and photoaccoustic. Excitation sources (lasers, time resolution), wavelength dispersion (gratings, prisms, interference filters,laser, placement of sample relative to dispersion, resolution), Detection of signal (photocells, photomultipliers, diode arrays, sensitivity and S/N), Single and Double Beam instruments, Interpretation (quantification, mixtures, absorption vs. fluorescence and the use of time, photoaccoustic, fluorescent tags).

UNIT – IV

Separation techniques

Chromatography: Gas chromatography, liquid chromatography, supercritical fluids, Importance of column technology (packing, capillaries), Separation based on increasing number of factors (volatility, solubility, interactions with stationary phase, size, electrical field), Detection: simple vs. specific (gas and liquid), Detection as a means of further analysis (use of tags and coupling to IR and MS), Electrophoresis (plates and capillary) and use with DNA analysis. 46 *Immunoassays and DNA techniques* **8h**

Mass spectroscopy*:* Making the gaseous molecule into an ion (electron impact, chemical ionization), Making liquids and solids into ions (electrospray, electrical discharge, laser desorption, fast atom bombardment), Separation of ions on basis of mass to charge ratio, Magnetic, Time of flight, Electric quadrupole. Resolution, time and multiple separations, Detection and interpretation (how this is linked to excitation). **8h**

UNIT – V

Elemental analysis: **10h**
Mass spectrometry (electrical discharges).
Atomic spectroscopy: Atomic absorption, Atomic emission, and Atomic fluorescence. Excitation and getting sample into gas phase (flames, electrical discharges, plasmas), Wavelength separation and resolution (dependence on technique), Detection of radiation (simultaneous/scanning, signal noise), Interpretation (errors due to molecular and ionic species, matrix effects, other interferences).
NMR spectroscopy: **P**rinciple, Instrumentation, Factors affecting chemical shift, Spin coupling, Applications. **4h**
Electroanalytical Methods: Potentiometry & Voltammetry **4h**

Radiochemical Methods **4h**
X-ray analysis and electron spectroscopy (surface analysis)

Reference books:

1. Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
2. 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.
3. P.W. Atkins: Physical Chemistry.
4. G.W. Castellan: Physical Chemistry.
5. C.N. Banwell: Fundamentals of Molecular Spectroscopy.
6. Brian Smith: Infrared Spectral Interpretations: A Systematic Approach.
7. W.J. Moore: Physical Chemistry

SEMESTER-VI

PAPER – VIII-A-3 : ANALYSIS OF DRUGS, FOODS , DAIRY PRODUCTS & BIO-CHEMICAL ANALYSIS

45 hrs (3 h / w)

UNIT- I

Analysis of the following drugs and pharmaceuticals preparations:
(Knowledge of molecular formula, structure and analysis)
Analysis of anlgesics and antipyretics like aspirin and paracetamol
Analysis of antimalerials like choloroquine .
Analysis of drugs in the treatment of infections and infestations :Amoxycillin., chloramphenicol, metronidazole, penicillin, tetracycline, cephalexin(cefalexin).
Anti tuberculous drug- isoniazid.

UNIT - II

Analysis of the following drugs and pharmaceuticals preparations:
(Knowledge of molecular formula, structure and analysis)
Analysis of antihistamine drugs and sedatives like: allegra, zyrtec(citirizine), alprazolam, trazodone, lorazepem, ambien(zolpidem), diazepam,

UNIT - III

Analysis of anti epileptic and anti convulsant drugs like phenobarbital and phenacemide.
Analysis of drugs used in case of cardiovascular drugs:atenolol, norvasc(amlodipine),
Analysis of lipitor(atorvastatin) a drug for the preventin of productin of cholesterol.
Analysis of diuretics like: furosemide (Lasix), triamterene
Analysis of prevacid(lansoprazole) a drug used for the prevention of production of acids in stomach.

UNIT - IV

Analysis of Milk and milk products: Acidity, total solids, fat, total nitrogen, protenines,lactose, phosphate activity, casein, choride. Analysis of food materials- Preservatives: Sodium carbonate, sodium benzoate sorbic acid Coloring matters, - Briliant blue FCF, fast green FCF, tertrazine, erytrhosine , sunset yellow FCF.
Flavoring agents - Vanilla , diacetyl, isoamyl acetate, limonene, ethylpropionate , allyl hexanoate and Adulterants in rice and wheat, wheat floo0r, sago,coconut oil, coffee powder, tea powder, milk..

UNIT - V

Clinical analysis of blood:Composition of blood,clinical analysis,trace elements in the body.Estimation of blood chlolesterol,glucose,enzymes,RBC & WBC ,Blood gas analyser.

REFERENCE BOOKS :

1.F.J.Welcher-Standard methods of analysis,
2.A.I.Vogel-A text book of quantitative Inorganic analysis-ELBS,
3.F.D.Snell & F.M.Biffen-Commercial methods of analysis-D.B.Taraporavala & sons,
4.J.J.Elving and I.M.Kolthoff- Chemical analysis - A series of monographs on analytical chemistry and its applications -- Inter Science- Vol I to VII.,
5.Aanalytical Agricultrual Chemistry by S.L.Chopra & J.S.Kanwar -- Kalyani Publishers

6. Quantitative analysis of drugs in pharmaceutical formulations by P.D.Sethi, CBS Publishers and Distributors, New Delhi
7. G.Ingram- Methods of organic elemental micro analysis- Chapman and Hall.,
8. H.Wincciam and Bobbles (Henry J)- Instrumental methods of analysis of food additives.,
9. H.Edward-The Chemical analysis of foods;practical treatise on the examination of food stuffs and the detection of adulterants,
10. The quantitative analysis of drugs- D.C.Garratt-Chapman & Hall.,
11. A text book of pharmaceutical analysis by K.A.Connors-Wiley-International.,
12. Comprehensive medicinal chemistry-Ed Corwin Hansch Vol 5,Pergamon Press.,

I. LABORATORY COURSE – VIII

Practical Paper – VIII-A-1: (at the end of semester VI) 30 hrs (2 h / W)

1. Preparation of Aspirin
2. Preparation of Paracetamol
3. Preparation of Acetanilide
4. Preparation of Barbutiric Acid
5. Preparation of Phenyl Azo β-naphthol

II. LABORATORY COURSE – VIII

Practical Paper – VIII-A-2 (at the end of semester VI)

30 hrs (2 h / W)

1.Green procedure for organic qualitative analysis: Detection of N, S andhalogens

2.Acetylation of 1^0 amine by green method: Preparation of acetanilide

3. Rearrangement reaction in green conditions: Benzil-Benzilic acid rearrangement

4. Electrophilic aromatic substitution reaction: Nitration of phenol

5. Radical coupling reaction: Preparation of 1,1-bis -2-naphthol

6. Green oxidation reaction: Synthesis of adipic acid

7. Green procedure for Diels Alder reaction between furan and maleic anhydride

List of Reference Books

1. Green Chemistry Theory and Practice. P.T.Anatas and J.C. Warner
2. Green Chemistry V.K. Ahluwalia Narosa, New Delhi.
3. Real world cases in Green Chemistry M.C. Cann and M.E. Connelly
4. Green Chemistry: Introductory Text M.Lancaster: Royal Society of Chemistry (London)
5. Green Chemistry: Introductory Text, M.Lancaster
6. Principles and practice of heterogeneous catalysis, Thomas J.M.,Thomas M.J., John Wiley
7. Green Chemistry: Environmental friendly alternatives R S Sanghli and M.M Srivastava, Narosa Publications

VII-A-3 Practical:- Project Work

Cluster Elective –II

Fuels and Industrial Inorganic materials

PAPER – VIII-B-1 : FUEL CHEMISTRY AND BATTERIES

45 hrs (3 h / w)

UNIT –I **12h**

Review of energy sources (renewable and non-renewable) – classification of fuels and their calorific value. Coal: Uses of Coal (fuel and non fuel) in various industries , its composition , carbonization of coal - coal gas , producer gas and water gas – composition and uses – fractionation of coal tar – uses of coal tar based chemicals , requisites of a good metallurgical coke , coal gasification (Hydro gasification and catalytic gasification) coal liquefaction and solvent refining.

UNIT-II **6h**

Petroleum and petrol chemical industry:

Composition of crude petroleum , refining and different types of petroleum products and their applications.

UNIT-III **10h**

Fractional distillation (principle and process) , cracking (Thermal and catalytic cracking). Reforming petroleum and non petroleum fuels (LPG , CNG , LNG , biogas) ,fuels derived from biomass , fuel from waste , synthetic fuels (gaseous and liquids) , clear fuels , petro chemicals : vinyl acetate , propylene oxide , isoprene , butadiene , toluene and its derivative xylene.

UNIT-IV **10h**

Lubricants:

Classification of lubricants , lubricating oils(conducting and non conducting) , solid and semi solid lubricants , synthetic lubricants. Properties of lubricants (viscosity index , cloud point , pore point) and their determination.

UNIT-V **7h**

Batteries:

Primary and secondary batteries, battery components and their role, Characteristics of

Battery. Working of following batteries: Pb acid, Li-Battery, Solid state electrolyte battery.

Fuel cells, Solar cell and polymer cell.

Reference books:

1. E.Stochi : Industrial chemistry , Vol-1,Ellis Horwood Ltd.UK
2. P.C.Jain , M.Jain: Engineering chemistry, Dhanpat Rai &sons , Delhi.
3. B.K.Sharma: Industrial Chemistry , Goel Publishing house , Meerut.

SEMESTER-VI

PAPER – VIII-B-2: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE

45 hrs (3 h / w)

UNIT - I

Recapitulation of *s*- and *p*-Block Elements **8h**

Periodicity in *s*- and *p*-block elements with respect to electronic configuration, atomic and ionic size, ionization enthalpy, electronegativity (Pauling, Mulliken, and Alfred - Rochow scales). Allotropy in C, S, and P. Oxidation states with reference to elements in unusual and rare oxidation states like carbides and nitrides), inert pair effect, diagonal relationship and anomalous behaviour of first member of each group.

UNIT – II **15h**

Silicate Industries

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.

Cements*:* Classification of cement, ingredients and their role, Manufacture of cement and the setting process, quick setting cements.

UNIT – III **8h**

Fertilizers:

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.

UNIT – IV **8h**

Surface Coatings:

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.

UNIT – V **6h**

Alloys:
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.

Chemical explosives:
Origin of explosive properties in organic compounds, preparation and explosive properties of
lead azide, PETN, cyclonite (RDX). Introduction to rocket propellants.

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,* Dhanpat Rai & 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

SEMESTER-VI

PAPER – VIII-B-3 : ANALYSIS OF APPLIED INDUSTRIAL PRODUCTS

45 hrs (3 h / w)

UNIT-I

Analysis of soaps: moisture and volatile matter,cobined alkali,total fatty matter, free alkali, total fatty acid, sodium silicate and chlorides.
Analysis of paints :Vehicle and pigments ,Barium Sulphate ,total lead, lead chromate,iron pigments, zinc chromate

UNIT- II

Analysis of oils:saponification value,iodine value,acid value,ester value, bromine value, acetyl value.
Analysis of industrial solvents like benzene,acetone,methanol and acetic acid., Determination of methoxyl and N-methyl groups.,

UNIT-III

Analysis of fertilizers: urea,NPK fertilizer,super phosphate,
Analysis of DDT,BHC,endrin,endosulfone,malathion,parathion.,
Analysis of starch,sugars,cellulose and paper,

UNIT -IV

Gas analysis: carbon dioxide, carbon monoxide, oxygen, hydrogen, saturated hydro carbon, unsaturated hydrocarbons, nitrogen, octane number, cetane number
Analysis of Fuel gases like: water gas,producer gas,kerosene (oil) gas.
Ultimate analysis :carbon, hydrogen,nitrogen,oxygen,phosphorus and sulfur.,

UNIT - V

Analysis of Complex materials:
Analysis of cement- loss on ignition, insoluble residu, total silica, sesqui oxides, lime, magnesia, ferric oxide, sulphuric anhydrid.
Analysis of glasses - Determinaiton of silica, sulphuur, barium, arsinic, antimony, total R_2O_3, calcium, magnesium, total alkalies,aluminium,chloride,floride

SUGGESTED BOOKS:

1.F.J.Welcher-Standard methods of analysis,
2.A.I.Vogel-A text book of quantitative Inorganic analysis-ELBS,
3.H.H.Willard and H.Deal- Advanced quantitative analysis- Van Nostrand Co,
4.F.D.Snell & F.M.Biffen-Commercial methods of analysis-D.B.Taraporavala & sons,
5.J.J.Elving and I.M.Kolthoff- Chemical analysis - A series of monographs on analytical chemistry and its applications -- Inter Science- Vol I to VII.,
6.G.Z.Weig - Analytical methods for pesticides,plant growth regulators and food additives - Vols I to VII,
7.Aanalytical Agricultrual Chemistry by S.L.Chopra & J.S.Kanwar -- Kalyani Publishers
8.Mannual of soil, plant, water and fertilizer analysis, R.M.Upadhyay and N.L Sharma,Kalyani Publishers

I. LABORATORY COURSE – VIII

Practical Paper – VIII-B-1: (at the end of semester VI) 30 hrs (2 h / W)

1. Preparation of Aspirin
2. Preparation of Paracetamol
3. Preparation of Acetanilide
4. Preparation of Barbutiric Acid
5. Preparation of Phenyl Azo β-naphthol

II. LABORATORY COURSE – VIII

Practical Paper – VIII-B-2: (at the end of semester VI)

30 hrs (2 h / W)

1.Green procedure for organic qualitative analysis: Detection of N, S andhalogens

2.Acetylation of 1^0 amine by green method: Preparation of acetanilide

3. Rearrangement reaction in green conditions: Benzil-Benzilic acid rearrangement

4. Electrophilic aromatic substitution reaction: Nitration of phenol

5. Radical coupling reaction: Preparation of 1,1-bis -2-naphthol

6. Green oxidation reaction: Synthesis of adipic acid

7. Green procedure for Diels Alder reaction between furan and maleic anhydride

List of Reference Books

1. Green Chemistry Theory and Practice. P.T.Anatas and J.C. Warner
2. Green Chemistry V.K. Ahluwalia Narosa, New Delhi.
3. Real world cases in Green Chemistry M.C. Cann and M.E. Connelly
4. Green Chemistry: Introductory Text M.Lancaster: Royal Society of Chemistry (London)
5. Green Chemistry: Introductory Text, M.Lancaster
6. Principles and practice of heterogeneous catalysis, Thomas J.M.,Thomas M.J., John Wiley
7. Green Chemistry: Environmental friendly alternatives R S Sanghli and M.M Srivastava, Narosa Publications

VII-A-3 Practical:- Project Work / Intern Ship

Cluster Elective –III

ORGANIC
PAPER – VIII-C-1 : ORGANIC SPECTROSCOPIC TECHNIQUES
45 hrs (3 h / w)

UNIT-I **10h**

NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY

Nuclear spin, Principles of NMR-Classical and Quantum Mechanical methods, Magnetic moment and Spin angular momentum. Larmour Frequency. Instrumentation. Relaxation-spin-spin & spin lattice relaxation. Shielding constants, Chemical shifts, Shielding and Deshielding mechanism-Factors influencing Chemical shift. Spin-Spin interactions-AX, AX_2 and AB types. Vicinal, Geminal and Long range coupling- Factors influencing coupling constants.

UNIT – II **5h**

Spin decoupling, Spin tickling, Deuterium exchange, Chemical shift reagents and Nuclear overhauser effect. Applications in Medical diagnostics, Reaction kinetics and Mechanically induced dynamic nuclear polarization. FT NMR and its Advantages.

UNIT-III **10h**

UV & VISIBLE SPECTROSCOPY

Electronic spectra of diatomic molecules. The Born-oppenheimer approximation. Vibrational coarse structure: Bond association and Bond sequence. Intensity of Vibrational-electronic spectra: The Franck-Condon principle. Rotational fine structure of electronic vibration transitions. Electronic structure of diatomic molecules.

Types of transitions, Chromophores, Conjugated dienes, trienes and polyenes, unsaturated carbonyl compounds-Woodward – Fieser rules.

UNIT-IV **5h**

Electronic spectra of polyatomic molecules. Chemical analysis by Electronic Spectroscopy – Beer-Lambert's Law. Deviation from Beer's law. Quantitative determination of metal ions (Mn^{+2}, Fe^{+2}, NO_2^-, Pb^{+2}). Simultaneous determination of Chromium and Manganese in a mixture.

UNIT-V **15h**

Electron Spin Resonance Spectroscopy

Basic Principles, Theory of ESR, Comparison of NMR & ESR. Instrumentaion, Factors affecting the 'g' value, determination of 'g' value. Isotropic and Anisotropic constants. Splitting hyper fine splitting coupling constants. Line width, Zero field splitting and Kramer degeneracy. Crystal field splitting, Crystal field effects.

Applications:- Detection of free radicals; ESR spectra of (a) Methyl radical ($CH_3^{\cdot}$), (b) Benzene anion ($C_6H_6^{-}$) (c) Isoquinine (d) $[Cu(H_2O)_6]^{+2}$ (e) $[Fe(CN)_5NO]^{-3}$ (f)

REFERENCE BOOKS:

1. Electron Spin Resonance Elementary Theory and Practical Applications- John E. Wertz and James R. Bolton, Chapman and Hall, 1986.
2. Spectroscopic Identification of organic compounds – Silverstein, Basseler and Morril.
3. Organic Spectroscopy- William Kemp.
4. Fundamentals of Molecular Spectroscopy- C.N.Banwell and E.A. Mc cash 4th Edition, Tata Mc Graw Hill Publishing Co., Ltd. 1994.
5. Physical Methods in Inorganic Chemistry – R.S.Drago, Saunders Publications.
6. Application of MÖssbauer Spectroscopy – Green Mood.
7. NMR, NQR, EPR and MÖssbauer Spectroscopy in inorganic chemistry – R.V Parish, Ellis, Harwood.
8. Instrumental Methods of Chemical Analysis- H.Kaur, Pragathi Prakashan, 2003.
9. Instrumental Methods of Analysis, 7th Edition – Willard, Merrit, Dean, Settle, CBS Publications, 1986.
10. Molecular Structure and Spectroscopy – G. Aruldhas, Prentice Hall of India Pvt.Ltd, New Delhi, 2001.
11. MÖssbauer Spectroscopy – N.N. Green Wood and T.C. Gibb, Chapman, and Hall, Landon 1971.
12. Coordination Chemistry: Experimental Methods- K. Burger, London Butter Worths, 1973.
13. Analytical spectroscopy – Kamlesh Bansal, Campus books, 2008.
14. Structural Inorganic Chemistry MÖssbauer Spectroscopy – Bhide.
15. Principle of MÖssbauer Spectroscopy – T.C. Gibb, Chapman, and Hall, Landon 1976.

Cluster Elective –III

ORGANIC

PAPER – VIII-C-2 : ADVANCED ORGANIC REACTIONS

45 hrs (3 h / w)

UNIT – I

ORGANIC PHOTOCHEMISTRY

Organic photochemistry : Molecular orbitals, carbonyl chromophore–triplet states, Jablonski diagram, inter–system crossing. Energy transfer. Energies properties and reaction of singlet and triplet states of and transitions.

Photochemical reactions : (a) Photoreduction, mechanism, influence of temperature, solvent, nature of hydrogen donors, structure of substrates on the course of photo reduction,.

UNIT – II

ORGNAIC PHOTOCHEMISTRY

Norrisch cleavages, type I : Mechanism, acyclic cyclicdiones, influence of sensitizer, photo Fries rearrangement. Norrisch type II cleavage : Mechanism and stereochemistry, type II reactions of esters : 1: 2 diketones, photo decarboxylation., Di - π methane rearrangement, Photochemistry – of conjugated dienes, Decomposition of nitrites – Barton reaction.

UNIT – III

PROTECTING GROUPS AND ORGANIC REACTIONS

Principles of (1) Protection of alcohols – ether formation including silyl ethers – ester formation, (2) Protection of diols – acetal,ketal and carbonate formation, (3) Protection of carboxylic acids – ester formation, benzyl and t–butyl esters, (4) Protection of amines – acetylation, benzoylation, benzyloxy carbonyl, triphenyl methyl groups and fmoc, (5) Protection of carbonyl groups – acetal, ketal, 1,2–glycols and 1,2–dithioglycols formation.

UNIT – IV

Synthetic reactions : Mannich reaction – Mannich bases – Robinson annulations. The Shapiro reaction, Stork–enamine reaction. Use of dithioacetals – Umpolung, phase transfercatalysis – mechanisms and use of benzyl trialkyl ammonium halides. Witting reaction.

UNIT –V : NEW SYNTHETIC REACTIONS

Baylis–Hillman reaction, RCM olefm metathesis, Grubb catalyst, Mukayama aldol reaction, Mitsunobu reaction, McMurrey reaction, Julia–Lythgoe olefination, and Peterson's stereoselective olefination, Heck reaction, Suziki coupling, Stille coupling and Sonogishira coupling, Buchwald–Hartwig coupling. Ugi reaction, Click reaction.

Recommended Books

1. Molecular reactions and Photochemistry by Charles Dupey and O.L. Chapman.
2. Molecular Photochemistry by Turru.
3. Importance of antibonding orbitals by Jaffe and Orchin.
4. Text Book of Organic Chemistry by Cram,. Hammand and Henrickson.
5. Some modern methods of organic synthesis by W. Carruthers.
6. Guide Book to Organic Synthesis by R.K. Meckie, D.M. Smith and R.A. Atken.
7. Organic Synthesis by O.House.
8. Organic synthesis by Michael B. Smith.
9. Organic Chemistry Claydon and others 2005.
10. Name Reactions by Jie Jack Li
11. Reagents in Organic synthesis by B.P. Mundy and others.
12. Tandem Organic Reactions by Tse–Lok Ho.

Cluster Elective –III
ORGANIC

PAPER – VIII-C-3 : PHARMACEUTICAL AND MEDICINAL CHEMISTRY
45 hrs (3 h / w)

UNIT-I **8h**

Pharmaceutical chemistry Terminology: Pharmacy, Pharmacology, Pharmacophore, Pharmacodynamics, Pharmacokinetics (ADME, Receptors - brief treartment) Metabolites and Anti metabolites.

UNIT-II

Drugs: **8h**

Nomenclature: Chemical name, Generic name and trade names with examples Classification: Classification based on structures and therapeutic activity with one example each, Administration of drugs

UNIT-III

Synthesis and therapeutic activity of the compounds: **12h**

a. Chemotheraputic Drugs

l.Sulphadrugs(Sulphamethoxazole) 2.Antibiotics - β-Lactam Antibiotics, Macrolide Antibiotics, 3. Anti malarial Drugs(chloroquine)

b. Psycho therapeutic Drugs:

1.Anti pyretics(Paracetamol) 2.Hypnotics, 3.Tranquilizers(Diazepam) 4.Levodopa

UNIT-IV

Pharmacodynamic Drugs: **8h**

1. Antiasthma Drugs (Solbutamol) 3. Antianginals (Glycerol Trinitrate)
4. Diuretics(Frusemide)

UNIT-V

HIV-AIDS: **9h**

Immunity - CD-4cells, CD-8cells, Retro virus, Replication in human body, Investigation available, prevention of AIDS, Drugs available - examples with structures: PIS: Indivanir (crixivan), Nelfinavir(Viracept).

List of Reference Books:

1.Medicinal Chemistry by Dr. B.V.Ramana

2.Synthetic Drugs by O.D.Tyagi & M.Yadav

3.Medicinal Chemistry by Ashutoshkar

4.Medicinal Chemistry by P.Parimoo

5.Pharmacology& Pharmacotherapeutics R.S Satoshkar & S.D.Bhandenkar

6.Medicinal Chemistry by Kadametal P-I & P.II

7.European Pharmacopoeia

MODEL PAPER

THREE YEAR B.Sc, DEGREE EXAMINATION

FIRST YEAR EXAMINATIONS
SEMESTER I
Paper –I: INORGANIC & ORGANIC CHEMISTRY - I

Time: 3 hours **Maximum Marks: 75**

PART- A

Answer any **FIVE** of the following questions
Each carries **FIVE** marks **5x5 = 25 Marks**

1. Define the electron deficient molecules and draw the structure of Borazole and Diborane.
2. Classify the Oxides based on the oxygen content with one example to each.
3. How the following are synthesized from Organo Lithium Compounds.

a) Acetic acid b) Ethyl alcohol

4. Define the Carbonium ion and explain the stability with no bond resonance.
5. Define the Markonikov's rule and explain the addition of 1- Propene with HBr.
6. Explain the acidity of the Acetylinic hydrogen with example.
7. Draw the conformational structures of Cyclohexane.
8. Define aromaticity and apply the Huckel's rule to benzene and naphthalene.

PART- B

Answer **ALL** the questions
Each carries **TEN** marks **5x10 = 50 Marks**

9. (a) Write note on Preparation, Structure and Properties of Silicones.

(OR)

(b) Explain the Preparation and Oxidation- Reduction reactions of Hydroxylamine.

10.(a) Give an account on different types of interhalogen compounds.

(OR)

(b) How the following are prepared from the Methyl Magnesium bromide and methyl lithium
1) Formaldehyde 2) Acetaldehyde3) Acetone 4) t- butyl alcohol

11. (a) Describe different types of Organic Reactions with one example to each.

(OR)

(b) Write notes on the following
1) Mesomeric effect 2) Hyper conjugation 3) Inductive effect

12.(a) Explain the addition of these reagents to alkenes with mechanism.
1) H_2O 2) HOX 3) H_2SO_4

(OR)

(b)Explain Baeyer's bond angle strain theory.

13. (a) Describe the Molecular Orbital structure of Benzene.

(OR)

(b) Explain the orientation in benzene with respect to alkyl and nitro groups.