शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर, जगदलपुर (छ.ग.)

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR JAGDALPUR (C.G.)

SYLLABUS

B.Com. PART-III

SESSION 2021-22

B.COM PART III
OPTIONAL GROUP A (Finance Area)
TITLE OF PAPER - FINANCIAL MANAGEMENT
PAPER – I

OBJECTIVE

The objective of this course is to help students understand the conceptual framework of financial management.

M.M. 75

UNIT-I Financial Management: Financial goals; Profit vs wealth maximization; Financial functions-investment, financing, and dividend decisions; Financial planning.

UNIT-II Capital Budgeting : Nature of investment decisions, Investment evaluation criteria,payback period, accounting rate of return, net present value, internal rate of return profitability index; NPV and IRR comparison.

UNIT-III Cost of Capital: Significance of cost of capital; Calculating cost of debt; Preference shares, equity capital, and retained earnings; Combined (weighted) cost of capital.Operating and financial Leverage : Their measure; Effects on profit, analyzing alternatefinancial plans, combined financial and operating leverage.

UNIT-IV Capital Structure: Theories and determinates. Dividend Policies: Issues in dividend policies; Walter's model; Gordon's model; M.M.Hypothesis, forms of dividends and stability in dividends, determinats.

UNIT-V Management of Working Capital: Nature of working capital, significance of workingcapital, operating cycle and factors determining of working capital requirements,
Management of working capital - cash, recevables, and inventories.

Suggested Reading:

1. Van Home J.C. : Financial Management and Policy; Prentice Hall of India, New
   Delhi.
2. Khan M.Y. and Jain P.K. : Financial Management, Text and Problems; Tata McGrow Hill, New Delhi.
3. Prasanna Chandra L Financial Management Theory and practice; Tata McGrow
   Hill, New Delhi.
4. Pandey I.M.: Financial Management Vikas Publishing Hous, New Delhi.
5. Brigham E.F. Gapenski L.C., and Ehrhardt M.C.: Financial Management - Theory and Practice; Harcourt College Publishers, Singapore.
6. Bhalla V.K.: Modern Working Capital Management, Anmol Pub. Delhi.

B.COM PART III
OPTIONAL GROUP A (Finance Area)
TITLE OF PAPER - FINANCIAL MARKET OPERATIONS
PAPER – II

OBJECTIVE

This course aims at acquainting the students with the working of financial markets in India.

M.M. 75

UNIT-I Money Market: Indian money market's composition and structure; (a) Acceptance houses, (b) Discount houses and (c) Call money market; Recent trends in Indian money market.

UNIT-II Capital Market: Security market - (a) New issue market, (b) Secondary market;
Functions and role of stock exchange; listing procedure and legal requirements; Public issue - pricing and marketing; Stock exchanges - National Stock Exchange, Bombay stock exchange

UNIT-III Securities contract and Regulations Act: Main provgisions.Investors Protection: Grievancesconcerning stock exchange dealings and theirremoval; Grievance cells in stock exchanges; SEBI; Company Law Board; Press;
Rmedy through courts.

UNIT-IV Functionaries on Stock Exchanges: Brokers, sub brokers, market makers, jobbers, portfolio consultants, institutional investors, and NRIs.

UNIT-V Financial Services: Marchant banking - Functions and roles; SEBI guide-lines; Creditrating - concept, functions, and types.

Suggested Reading:

1. Chandler M.V. and Goldfeld S.M.: Economics of money and Banking, Harper and Row, New Delhi.
2. Gupta Suraj B. Monetary Economics; s. chand and Co. New Delhi.
3. Gupta Suraj B. Monetary Planning in India; Oxford, Delhi.
4. Bhole L.M.: Financial Markets and Institutions: Tata McGrow Hill, New Delhi.
5. Hooda R.P.: Indian Securities Market - Investors view point; Excell Books, New Delhi.
6. R.B.I.: Functions and Working.
7. R.B.I.: Report in Currency and Finance.
8. R.B.I.: Report of the Committee to Review the working of the monetary system Chakravarty committee.
9. R.B.I.: Report of the Committee on the Financial System, Narsimham Committee.

B.COM PART III
OPTIONAL GROUP B (Marketing Area)
TITLE OF PAPER -PRINCIPLES OF MARKETING
PAPER – I

OBJECTIVE

The Objective of this course is to help students to understand the concept of marketing and its applications.

M.M. 75

UNIT-I   Introduction: Nature and scope of marketing; Importnace of marketing as a business function, and in the economy; Marketing concepts - traditional and modern; Selling vs. Marketing; Marketing mix; Marketing environment.

UNIT-II   Consumer Behaviour and Market Segmentation: Nature, scope, and significance ofconsumer behaviour; Market segmentation - concept and importance; Bases for market segmentation.

UNIT-III   Product: Concept of product, consumer, and industrial goods; Product planning and development; Packaging role and functions; Brand name and trade mark; after sales service; Product life cycle concept. Price: Importance of price in the marketing mix; Factors affecting price of a product/service; Discounts and rebates.

UNIT-IV   Distributions Channels and Physical Distribution; Distribution channels - Concept and role; Types of distribution channels. Factors affecting choice of a distribution channel; Retailer and holesaler; Physical distribution of goods; Transportation, Warehousing, Inverntory control; Order processing.

UNIT-V   Promotion: Methods of promotion; Optimum promotion mix; Advertising media – the irralative merits and limitations; Characteristics of an effective advertisement; Personal selling; *Selling as a career; Classification* of successful sales person; Functions of sales man.

Recent development in marketing – social marketing, online marketing, direct marketing, Services marketing, Green marketing.

Suggested Reading:

1. Philip Kotler: Marketing Management Englewood Cliffs; Prentice Hall, N.J.
2. William M. Pride and O.C. Ferrell: Marketing: Houghton - Mifflin Boston.
3. Stanton W.J. Etzel Michael J., and Walker Bruce J. Fundamentals of Marketing; McGrawHill, New York.
4. Lamb Charies W., Hair Joseph F. and McDaniel Carl : Principles of Marketing; South-Western-Publishing, Cincinnati, Ohio.
5. Cravens David W. Hills Gerald E., Woodruff Robert B : Marketing management :
   RichardD. Inwin, Home wood Illinois.
6. Kotler Philip and Armstrong Gary : Principles of Marketing; Prentice Hall of India, New Delhi.
7. Dr. R.C. Agrawal, Agra.
8. Dr. S.C. Saxena Agra.
9. Dr. S.K. Jain, Hindi GranthAcademi. M.P.
10. Dr. N.C. Jain

B.COM PART III

OPTIONAL GROUP B (Marketing Area)
TITLE OF PAPER -INTERNATIONAL MARKETING
PAPER – II

OBJECTIVE

This course aims at acquainting student with the operations of marketing in internation alenvironment.

M.M. 75

UNIT-I International Marketing: Nature, definiton, and scope of international marketing; Domestic marketing vs. International marketing; International environment externaland internal.

UNIT-II dentifying and Selecting Foreign Market: Foreign market entry mode decisions. Product Planning for international Market: Product designing; Standardization vs. adaptation; Branding and packaging; Labeling and quality issues; after sales service. International pricing: Factors Influenceing International price; Pricing process-processand methods; International price quotation and payment terms.

UNIT-III Promotion of Product/Services Abroad: Methods of international promotion; Direct mail and sales literature; Advertising; Personal selling; Trade fairs and exhibitions.

UNIT-IV International Distribution: Distribution channels and logistics decisions; Selection and appointment of foreign sales agents.

UNIT-V Export Policy and Practices in India: Exim policy - an overview; Trends in India's foreign trade; Steps in starting an export business; Product selection; Market Selection; Export pricing; Export finance; Documentation; Export procedures; Export Assistance and incentives. Marketing Control Process

Suggested Reading:

1. Bhattacharya R.L. and Varshney B.: International Mrketing Management; Sultan Chand, New Delhi.
2. Bhattacharya B. : Export Marketing Strategles for Success; Global Press, New Delhi.
3. Keegan W.J.: Multinational Marketing Management; Prentice Hall, New Delhi.
4. Kriplani V.: International marketing; Prentice Hall New Delhi.
5. Taggart J.H. and Moder Mott. M.C.: The Essence of International Business; Prentice Hall New Delhi.
6. Kotler Phillip: Principles of Marketing; Prentice Hall New Delhi.
7. Fayer Weather John: International Marketing; Prentice Hall N.J.
8. Caterora P.M. and Keavenay S.M.: Marketing an international Perspective; Erwin Homewood, Illinois.
9. Paliwala, Stanely J. The Essence of International marketing; Prentice Hall, NewDelhi.

B.COM PART III
OPTIONAL GROUP C (Commercial Area)
TITLE OF PAPER - INFORMATION TECHNOLOGY AND ITS APPLICATIONS IN BUSINESS
PAPER – I

OBJECTIVE

The objective of the course is to famillatize the students with the innovation information technology and how it affects business. An understanding of the group rules of these technologies will enable the students to appreciate the nitty-gritty Commerce.

M.M. 75

UNIT-I   Information Revolution and information Technology (IT) : Deployment of Business; Basic features of IT; Impact of IT on business environment and social fabric; Invention of writing; Written books; Printing Press and movable type Gutenberg's invention;Radio; telephone, wireless and satelite communication computing and dissemination of information and knowledge and convergence technologies (Internet with Wireless-WAP).

UNIT-II   Fundamentals of Computer: Data, information and EDP: Data, information and concept of data and information; Levels of information from data; processing; Electronic data processing; Electronic machines;

     a. Number Systems and Codes: Different number systems - binary, octal decimal, hexagonal, and their conversion codes used in computers; Bed, EBCDIC, ASCII; Gray and conversions.

     b. Computer Arithmetic and Gates: Binary arithmetic, complements, addition subtraction; Conversion from one system to another; Logic Gates, truthtable and applicationsminimisation, and K-maps.

     c. Computer Processing System: Definition of computer; Hardware/Software concepts; Generation of computers; Types of computers; Elements of computer; CPU and its functions, various computer systems.

     d. I/O devices: Basic concepts of I/O devices; various input devices Keyboard, mouse; MICR, OCR, microphones.

     e. Various output devices: VDU, printer, plotter, spooling, L.S.

     f. Storage Devices: Primary and secondary memory; Types of memory capacityand its enhancement; Memory devices and comparisons; Auxiliary storage, tapes, disks (magnetic and potical); various devices and their comparison.

g. System Software - Roale of Software, Different System Software: O.S., utilization element of O.S. - Its types and variations; DOS and windows.

h. Computer and Networks: Need of communication; Data transmission; Baud; Bandwidth; Communication Channel; Multiplexing; Basic network concepts; O.S.I. model; Types of topologies; LAN, WAN, Client server concept.

UNIT-III   Computer-based Business Applications

a. Word Processing : Meaning and role of word processing in creating of documents, editing, formatting, and printing documents, using tools such as spelling check, thesaurus, etc. in word processors (MS-Word).

b. Electronic Spreadsheet : Structure of spreadsheet and its applications to accounting, finance, and marketing functions of business; Crating a dynamic/sensitive worksheet; Concept of absolute and relative cell reference; Using builtinfunctions; Goal seeking and solver tool; Using graphics and formatting of Worksheet; sharing data with other desktop applications; Strategies of cratingerror-free worksheet (MS-Excel, Lotus 123). Practical knowledge on WingsAccounting (Software).

c. Programming under a DBMS environment: The concept of data base management system; Data field, records, and files, Sorting and indexing data;Searching records, designing queries, and reports; Linking of data files; Understanding programming environment in DBMS; Developing menu drivenapplications in query language (MS-Access).

UNIT-IV   Electronic Data Interchange (EDI), Introduction to EDI; Basics of EDI; EDI standards; Financial EDI (FEDI); FEDI for international trade transaction; Applications of EDI; Advantages of EDI; Future of EDI.

UNIT-V   The Internet and its Basic ConceptsInternet-concept, history development in India; Technological foundation of internet; Distributed computing; Client-server computing; Internet protocol suite; Application of distributed computing; Client-server computing; Internet protocol suite in the internet environment; Domain Name System (DNS); Domain Name Service (DNS); Generic top-lelveldomian (gTLD); Country code top-level domain (ccTLD); - India; Llocation of second-level doomains; IP addresses; Internet protocol; Applications of Internet in business, education, governance, etc. Information System Audit Basic idea of information audit; Difference with the traditional concepts of audit; Conduct and applications of IS audit in internet environment.

Suggested Reading:

1. AgrawalaKamlesh N. and Agarwala Deeksha: Business on the Net - Introduction to Ecommerce, Macmillan India, New Delhi.
2. AgarwalaKamlesh, N. and Agarwala Deeksha: Bulls, Bears and The mouse; and introduction to On-line Service Market Trading; Macmillan India, New Delhi.
2. Agarwala Kamlesh, N. and Agarwala Prateek Amar; WAP the Net; an Introduction on Wireless Application Protocol; Macmillan India, New Delhi.
3. Bajaj Kamlesh K. and Nag Debjanl: E-Commerce; The cutting Edge of Business; Tata McGraw Hill, New Delhi.
4. Edwards, Ward and Bytheway : The Essence of Information Systems; Prentice Hall, NewDelhi.
5. Garg & Srinivasan: Work Book on Systems Analysis & Design; Prentice Hall New Delhi.
7. Kanter: Managing with Information; Prentice Hall New Delhi.
8. Minoli Daniel, Minoli Emma: Web Commerce Technology Handbook; Tata McGraw Hill, New Delhi.
9. Minoli Daniel: Internet & Internet Engineering; Tata McGrow Hill, New Delhi.
10. Yeats: Systems Analysis & Design; Macmillan India, New Delhi.
11. Goyal: Management information System; Macmillan India, New Delhi.
12. Timothi J O'Leary: Microsoft Office 2000; Tata McGrow Hill, New Delhi.

OPTIONAL GROUP C (E-Commerce Area)

TITLE OF PAPER -ESSENTIAL OF E-COMMERCE

PAPER – II

OBJECTIVE

The objective of this course is to familiarize the students with the basics of e-commerce and to comprehend its potential.

M.M. 75

UNIT-I   Internet and Commerce: Business operations; E-Commerce practices; Concepts b2b, b2c, b2g, g2h; Benefits of e commerce to organization, consumers, and society; Limitation of e-commerce; Management issues relating to e-commerce.

Operations of E-Commerce: Credit card transaction; Secure Hypertext Transfer Protocol (SHTP); Electronic payment systems; secure electronic transaction (SET); Set's encryption; Process; Cybercash; Smart cards; Indian payment models.

UNIT-II   Applications in B2C: Consumer's shopping procedure on the internet; Impact on disintermediation and re-inermediation; Global market; Strategy of traditional department stores; Products in b2c model; Success factors of e-brokers; Broker based services on-line; Online travel tourism services; Benefits and impact of e-commerce on travel industry; Real estate market; Online stock trading and its benefits; Online banking and its benefits; Online financial services and their future; Educations benefits, implementation, and impact.

UNIT-III   Applications in B2B; Applications of b2b, Key technologies for b2b; Architectural models of b2b; Characteristics of the supplier-oriented marketplace, buyer-oriented market place, and intermediary-oriented marketplace; Benefits of b2b on procurement re-engineering; Just in Time delivery in b2b; Internet-based EDI from traditional EDI; Integrating EC with back-end information systems; Marketing issues in b2b.

UNIT-IV   Applications in Governance: EDI in governance; E-government; E-governance applications of the internet; Concept of government to business, business to government and citizen-to-government; E-governance models; Private sector interfacein e-governance.

UNIT-V   Emerging Business Models: Retail model; Media model; Advisory model, Mode-toordermanufacturing model; Do-it yourself model; Information service model; Emergin hybrid models; Emerging models in India. Security and Legal aspects of E-commerce.

Suggested Reading:

1.   AgarwalaKamlesh. N. and AgarwalaDeekhsa: Bridge to Online Storefornt; MacmillanIndia, New Delhi.
2.   AgarwalaKamlesh. N. and AgarwalaDeeksha: Business on the Net Introduction to theE-commerce; Macmillan India New Delhi.
3.   AgarwalaKamlesh N. and AgarwalaDeeksha: Bulls, Bears and TheMouse: AnIntroduction to Online Stock Market Trading; Macmillan India New Delhi.
4.   Tiwari Dr. Murli D.: Eductaion and E-Governance; Macmillan India, New Delhi.
5.   Minoli Daniel, MinoliEmma: Web Commerce Technology Handbook; Tata McGraw Hill, New Delhi.
6.   MinoliDeniel, Internet & Internet Engineering: Tata McGrow Hill, 1999.
7.   BhatnagarSubhash and Schware Robert (Eds): Information and CommunicationTechnology in Development; Sage Publications India, New Delhi.
7.   Amor, Daniel: E-business R evealuation, The : Living and Working in an InterconnectedWorld; Prentice Hall, U.S.
8.   Afuah, A., and Tuccu, C.: Internet usiness models and Strategies; McGraw Hill,
     New York.

B.COM PART III
OPTIONAL GROUP D (Money Banking & Insurance Area)
TITLE OF PAPER FUNDAMENTAL OF INSURANCE
PAPER – I

OBJECTIVE

This course enables the students to know the fundamentals of insurance.

M.M. 75

UNIT-I   Introduction to Insurance: Purpose and need of insurance; Insurance as a social security tool; Insurance and economic development.

UNIT-II   Fundamentals of Agency Law: Definiton of an agent; Agents regulations; Insurance intermediaries; Agents compensation.

UNIT-III   Procedure for Becoming an Agent : Prerequisite for obtaining a license; Duration of license; Cancellation of incense; Revocation or suspension/termination of agent appointment; Code of conduct; Unfair practices. Functions of the Agent: Proposal form and other forms for grant of cover; Financial and medical underwriting; Material information; Nomination and assignment; Procedure regarding settlement of policy claims.

UNIT-IV   Company Profile : organizational set-up of the company; Promotion strategy; Market share; Important activities; Structure; Product; Actuarial profession; Product pricing actuarial aspects; Distribution channels.

UNIT-V   Fundamentals/Principles of Life insurance/ Marine /Fire /Medical/General Insurance; Contracts of various kinds; Insurable Interest. Online insurance procedure

Suggested Reading:

1. Mishra M.N.: Insurance Principle and Practice; S. Chand and Co., New Delhi.
2. Insurance Regulatory Development Act. 1999.
3. Life Insurance Corporation Act. 1956.
4. Gupta OS: Life Insurance; Frank brothers, New Delhi.
5. Vinayakam N., Radhaswamy and Vasudevan SV: Insurance - Principles and Practice,
S. Chand and Co. New Delhi.
6. Mishra MN: Life Insurance Corporation of India, Vols I, II & III; Raj Books, Jaipur.
7. BalchandShriwastava, Agra.
8. Dr. M.L. Singhai, RAmesh Book Depot, Jaipur.

B.COM PART III
OPTIONAL GROUP D (Money Banking & Insurance Area)
TITLE OF PAPER - MONEY & BANKING SYSTEM
PAPER –II

OBJECTIVE

This course enables the students to know the working of the Indian Money & banking system.

M.M. 75

UNIT-I Money: Function, Alternative Measures tomoney supply in India - their differentcomponents. Meaning and changing relative importance of each.

UNIT-II Indian Banking System : Structure and organization of banks; Reserve Bank of India;Apex banking Institutions; Commercial banks; Regional rural banks; Cooperativebanks; Development banks.

UNIT-III Banking Regulation Act, 1947 : History; Social control; Banking Regulation Act asapplicable to banking companies and public sector banks; Banking Regulation Act asapplicable to Cooperative banks.

UNIT-IV Regional Rural and Cooperative Banks in India: Functions; Role of regional rural andcooperative banks in rural India; Progress and performance.

UNIT-V Reserve Bank of India: Objectives; Organization; Functions and working; Monetarypolicy; Credit control measures and their effectiveness.
State Bank of India, Project History, Objectives, Functions & Organization working& progress.
Internet banking system

Suggested Reading:

1. Basu A.K.: Fundamentals of Banking-Theory and Practice; a Mukherjee and Co., Calcutta.
2. Sayers R.S.: Modern Banking: Oxford University Press.
3. Panandikar S.G. And Mithani D.M.: Banking in India; orient Longman.
4. Reserve Bank of India: Functions and Working.
5. Dekock: Central Banking; Crosby lock wood Staples, London.
6. Tannan M.L.: Banking - Law and Practice in India: India Law House, New Delhi.
7. Knubchandani B.S.: Practice and Law of Banking; Macmillan, New Delhi.
8. Shekhar and Shekhar: Banking Theory and Practice; Vikas Publishing House, New Delhi.
9. Harishchandra Sharma.
10. M.L. Singhai.

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SYLLABUS

B.Sc. PART-III

SESSION 2021-22

B.A./B.Sc. Part-III
MATHEMATICS
PAPER - III (OPTIONAL)
(I)   PRINCIPLES OF COMPUTER SCIENCE

UNIT-I   **Data Storage** - Storage of bits. Main Memory. Mass Storage. Coding Information of Storage. The Binary System. Storing integers, storing fractions, communication errors.
Data Manipulation - The Central Processing Unit. The Stored-Program Concept. Programme Execution. Other Architectures. Arithmetic/Logic Instructions. Computer-Peripheral Communication.

UNIT-II   **Operating System and Networks** - The Evolution of Operating System. Operating System Architecture. Coordinating the Machine's Activities. Handling Competition Among Process. Networks. Networks Protocol.
Software Engineering - The Software Engineering Discipline. The Software Life Cycle. Modularity. Development Tools and Techniques. Documentation. Software Ownership and Liability.

UNIT-III   **Algorithms** - The Concept of an Algorithm, Algorithm Representation. Algorithm Discovery. Iterative Structures. Recursive Structures. Efficiency and Correctness. (Algorithms to be implemented in C++). **Programming Languages** - Historical Perspective. Traditional Programming Concepts, Program Units. Language Implementation. Parallel Computing. Declarative Computing.

UNIT-IV   **Data Structures** - Arrays. Lists. Stacks. Queues. Trees. Customised Data Types. Object Oriented Programming.
File Structure - Sequential Files. Text Files. Indexed Files. Hashed Files. The Role of the Operating System.
Database Structure - General Issues. The Layered Approach to Database Implementation. The Relational Model. Object-Oriented Database. Maintaining Database Integrity. E-R models

UNIT-V   **Artificial Intelligence** - Some Philosophical Issues. Image Analysis. Reasoning, Control System Activities. Using Heuristics. Artificial Neural Networks. Application of Artificial Intelligence.
Theory of Computation - Turning Machines. Computable functions. A Non computable Function. Complexity and its Measures. Problem Classification.

REFERENCES:
1. J. Glen Brook hear, Computer Science: An Overview, Addition -Wesley.
2. Stanley B. Lippmann, Josee Lojoie, C++ Primer (third Edition), Addison-Wesley.

B.A./B.Sc. Part-III
MATHEMATICS
PAPER - III (OPTIONAL)
(II) DISCRETE MATHEMATICS

UNIT-I   **Sets and Propositions** - Cardinality. Mathematical Induction, Principle of inclusion and exclusion. **Computability and Formal Languages** - Ordered Sets. Languages. Phrase Structure Grammars. Types of Grammars and Languages. Permutations. Combinations and Discrete Probability.

UNIT-II   **Relations and Functions** - Binary Relations, Equivalence Relations and Partitions. Partial Order Relations and Lattices. Chains and Antichains. Pigeon Hole Principle.
Graphs and Planar Graphs - Basic Terminology. Multigraphs. Weighted Graphs. Paths and Circuits. Shortest Paths. Eulerian Paths and Circuits. Travelling Salesman Problem. Planner Graphs. Trees.

UNIT-III   **Finite State Machines** - Equivalent Machines. Finite State Machines as Language Recognizers. **Analysis of Algorithms** - Time Complexity. Complexity of Problems. Discrete Numeric Functions and Generating Functions.

UNIT-IV   **Recurrence Relations and Recursive Algorithms** - Linear Recurrence Relations with constant coefficients. Homogeneous Solutions. Particular Solution. Total Solution. Solution by the Method of Generating Functions. Brief review of Groups and Rings.

UNIT-V   **Boolean Algebras** - Lattices and Algebraic Structures. Duality, Distributive and Complemented Lattices. Boolean Lattices and Boolean Algebras. Boolean Functions and Expressions. Prepositional Calculus. Design and Implementation of Digital Networks. Switching Circuits.

REFERENCES:
1.   C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science Series, 1986

B.A./B.Sc. Part-III
MATHEMATICS
PAPER - III (OPTIONAL)
(III) PROGRAMMING IN C AND NUMERICAL ANALYSIS
(Theory & Practical)
Theory component will have maximum marks 30.
Practical component will have maximum marks 20.

UNIT-I Programmer's model of a computer. Algorithms. Flow Charts. Data Types. Arithmetic and input/output instructions. Decisions control structures. Decision statements. Logical and Conditional operators. Loop. Case control structures. Functions. Recursions. Preprocessors. Arrays. Puppetting of strings. Structures. Pointers. File formatting.

Numerical Analysis

UNIT-II **Solution of Equations:** Bisection, Secant, Regula Falsi, Newton's Method, Roots of Polynomials. **Interpolation:** Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation Formulas using Differences. Numerical Differentiation. Numerical Quadrature: Newton-Cote's Formulas. Gauss Quadrature Formulas, Chebychev's Formulas.

UNIT-III **Linear Equations:** Direct Methods for Solving Systems of Linear Equations (Guass Elimination, LU Decomposition, Cholesky Decomposition), Iterative Methods (Jacobi, GaussSeidel, Relaxation Methods).
The Algebraic Eigen value problem: Jacobi's Method, Givens' Method, Householder's Method, Power Method, QR Method, Lanczos' Method.

UNIT-IV **Ordinary Differential Equations:** Euler Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical Integration, Methods Based on Numerical Differentiation, Boundary Value Problems, Eigenvalue Problems.
Approximation: Different Types of Approximation, Least Square Polynomial Approximation, Polynomial Approximation using Orthogonal Polynomials, Approximation with Trigonometric Functions, Exponential Functions, Chebychev Polynomials, Rational Functions.

Monte Carlo Methods
UNIT-V Random number generation, congruential generators, statistical tests of pseudo-random numbers. Random variate generation, inverse transform method, composition method, acceptance rejection method, generation of exponential, normal variates, binomial and Poisson variates.
Monte Carlo integration, hit or miss Monte Carlo integration, Monte Carlo integration for improper integrals, error analysis for Monte Carlo integration.

REFERENCES:
1. Henry Mulish and Herbert L. Cooper, Spirit of C: An Introduction to Modern Programming, Jaico Publishers, Bombay.
2. B.W. Kernighan and D.M. Ritchie. The C Programming Language 2nd Edition, (ANSI features) Prentice Hall, 1989.
3. Peter A Darnel and Philip E. Margolis, C: A Software Engineering Approach, Narosa Publishing House, 1993.
4. Robert C. Hutehisonand Steven B. Just, Programming using C Language, McGraw Hill, 1988.
5. Les Hancock and Morris Krieger, The C Primer, McGraw Hill, 1988.

6. V. Rajaraman, Programming in C, Prentice Hall of India, 1994.

7. Byron S. Gottfried, Theory and Problems of Programming with C, Tata McGraw-Hill Publishing Co. Ltd., 1998.

8. C.E. Froberg, Introduction to Numerical Analysis, (Second Edition), Addison-Wesley, 1979.

9. James B. Scarborough, Numerical Mathematical Analysis, Oxford and IBH Publishing Co. Pvt. Ltd. 1966.

10. Melvin J. Maron, Numerical Analysis A Practical Approach, Macmillan publishing Co., Inc. New York, 1982.

11. M.K. Jain, S.R.K. iyengar, R.K. Jain, Numerical Methods Problems and Solutions, New Age International (P) Ltd., 1996.

12. M.K. Jain, S.R.K. iyengar, R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International (P) Ltd., 1999.

13. R.Y. Rubinstein, Simulation and the Monte Carlo Methods, John Wiley, 1981.

14. D.J. Yakowitz, Computational Probability and Simulation, Addison-Wesley, 1977.

LIST OF PRACTICAL TO BE CONDUCTED...

1. Write a program in C to find out the largest number of three integer numbers.
2. Write a program in C to accept monthly salary from the user, find and display income tax with the help of following rules :

   Monthly Salary Income Tax

   9000 or more 40% of monthly salary

   7500 or more 30% of monthly salary

   7499 or less   20% of monthly salary
3. Write a program in C that reads a year and determine whether it is a leap year or not.
4. Write a program in C to calculate and print the first n terms of Fibonacci series using looping statement.
5. Write a program in C that reads in a number and single digit. It determines whether the first number contains the digit or not.
6. Write a program in C to computes the roots of a quadratic equation using case statement.
7. Write a program in C to find out the largest number of four numbers using function.
8. Write a program in C to find the sum of all the digits of a given number using recursion.
9. Write a program in C to calculate the factorial of a given number using recursion.
10. Write a program in C to calculate and print the multiplication of given 2D matrices.
11. Write a program in C to check that whether given string palindrome or not.
12. Write a Program in C to calculate the sum of series:

$$1 + x + \frac{1}{2!}x^2 + \frac{1}{3!}x^3 + \ldots\ldots + \frac{1}{n!}x^n$$

13. Write a program in C to determine the grade of all students in the class using Structure. Where structure having following members - name, age, roll, sub1, sub2, sub3, sub4 and total.
14. Write a program in C to copy one string to another using pointer. (Without using standard library functions).
15. Write a program in C to store the data of five students permanently in a data file using file handling.