

L T P
310

Class Work marks : 50
Theory marks : 100
Total marks : 150
Duration of Exam : 3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section - A

Fourier Series and Fourier Transform : Euler's formulae, conditions for a Fourier expansion, change of interval, Fourier expansion of odd and even functions, Fourier expansion of square wave, rectangular wave, saw-toothed wave, half and full rectified wave, half range sine and cosine series.

Fourier integrals, Fourier transforms, Shifting theorem (both on time and frequency axes), Fourier transforms of derivatives, Fourier transforms of integrals, Convolution theorem, Fourier transform of Dirac-delta function.

Section - B

Functions of Complex Variable : Definition, Exponential function, Trigonometric and Hyperbolic functions, Logarithmic functions. Limit and Continuity of a function, Differentiability and Analyticity.

Cauchy-Riemann equations, necessary and sufficient conditions for a function to be analytic, polar form of the Cauchy-Riemann equations. Harmonic functions, application to flow problems. Integration of complex functions. Cauchy-Integral theorem and formula.

Section - C

Power series, radius and circle of convergence, Taylor's Maclaurin's and Laurent's series. Zeros and singularities of complex functions, Residues. Evaluation of real integrals using residues (around unit and semi circle only).

Probability Distributions and Hypothesis Testing: Conditional probability, Bayes theorem and its applications, expected value of a random variable. Properties and application of Binomial, Poisson and Normal distributions.

Section - D

Testing of a hypothesis, tests of significance for large samples, Student's t-distribution (applications only), Chi-square test of goodness of fit.

Linear Programming : Linear programming problems formulation, Solving linear programming problems using (i) Graphical method (ii) Simplex method (iii) Dual simplex method.

TEXT BOOKS :

1. Engg Mathematics By Babu Ram, Pearson India.
2. Advanced Engg. Mathematics : F Kreyszig.
3. Higher Engg. Mathematics : B.S. Grewal.

REFERENCE BOOKS :

1. Advance Engg. Mathematics : R.K. Jain, S.R.K.Iyenger.
2. Advanced Engg. Mathematics : Michael D. Greenberg.
3. Operation Research : H.A. Taha.
4. Probability and statistics for Engineers : Johnson and PHI.

L T P
3 1 0

Class Work marks : 50
Theory marks : 100
Total marks : 150
Duration of Exam : 3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section – A

Definition of Economics - various definitions, Nature of Economic problem, Production possibility curve Economic laws and their nature. Relation between Science, Engineering, Technology and Economics.

Concepts and measurement of utility, Law of Diminishing Marginal Utility, Law of equi-marginal utility - its practical application and importance.

Section - B

Meaning of Demand, Individual and Market demand schedule, Law of demand, shape of demand curve, Elasticity of demand, measurement of elasticity of demand, factors effecting elasticity of demand, practical importance & applications of the concept of elasticity of demand.

Meaning of production and factors of production; Law of variable proportions, Returns to scale, Internal and External economics and diseconomies of scale.

Section - C

Various concepts of cost - Fixed cost, variable cost, average cost, marginal cost, money cost, real cost opportunity cost. Shape of average cost, marginal cost, total cost etc. in short run and long run.

Meaning of Market, Types of Market - Perfect Competition, Monopoly, Oligopoly, Monopolistic Competition (Main features of these markets)

Section - D

Supply and Law of Supply, Role of Demand & Supply in Price Determination and effect of changes in demand and supply on prices.

Nature and characteristics of Indian economy (brief and elementary introduction), Privatization - meaning, merits and demerits. Globalisation of Indian economy - merits and demerits. Elementary Concepts of VAT, WTO, GATT & TRIPS agreement.

TEXT BOOKS :

1. Principles of Economics : P.N. Chopra (Kalyani Publishers).
2. Modern Economic Theory – K.K. Dewett (S.Chand)

REFERENCE BOOKS :

1. A Text Book of Economic Theory Stonier and Hague (Longman's Landon)
2. Micro Economic Theory – M.L. Jhingan (S.Chand)
3. Micro Economic Theory - H.L. Ahuja (S.Chand)
4. Modern Micro Economics : S.K. Mishra (Pragati Publications)
5. Economic Theory - A.B.N. Kulkarni & A.B. Kalkundrikar (R.Chand & Co.)
6. Indian Economy : Rudar Dutt & K.P.M. Sundhram

CSE-201 F

Data Structures Using 'C'
(CSE, EL, ECE, IT, ECE)

L T P
3 1 -

Class Work marks : 50
Theory marks : 100
Total marks : 150
Duration of Exam : 3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section – A Overview of C, Introduction, Stacks and Queues

Overview of 'C' :Introduction , Flow of Control, Input output functions, Arrays and Structures, Functions

Data structures and Algorithms: an overview : concept of data structure, choice of right data structures, types of data structures, basic terminology Algorithms, how to design and develop an algorithm: stepwise refinement, use of accumulators and counters; algorithm analysis, complexity of algorithms Big-oh notation.

Arrays : Searching Sorting: Introduction, One Dimensional Arrays, operations defined : traversal, selection, searching, insertion, deletion, and sorting

Searching: linear search, binary search; Sorting : selection sort, bubble sort, insertion sort, merge sort, quick sort, shell sort. Multidimensional arrays, address calculation of a location in arrays.

Stacks and queues: Stacks, array representation of stack. Applications of stacks. Queues, Circular queues, , array representation of Queues,. Deques, priority queues, Applications of Queues.

Section - B Pointers and Linked Lists

Pointers: Pointer variables, Pointer and arrays, array of pointers, pointers and structures, Dynamic allocation.

Linked Lists: Concept of a linked list,. Circular linked list, doubly linked list, operations on linked lists. Concepts of header linked lists. Applications of linked lists, linked stacks, linked Queues.

Section - C Trees and Graphs

Trees: Introduction to trees, binary trees, representation and traversal of trees, operations on binary trees, types of binary trees, threaded binary trees, B Trees, . Application of trees.

Graphs : Introduction, terminology, 'set, linked and matrix' representation, operations on graphs, Applications of graphs.

Section - D File Handling and Advanced data Structure

Introduction to file handling, Data and Information, File concepts, File organization, files and streams, working with files. AVL trees, Sets, list representation of sets, applications of sets, skip lists

Text Book:

1. Data Structures using C by A. M. Tenenbaum, Langsam, Moshe J. Augentem, PHI Pub.
2. Data Structures using C by A. K. Sharma, Pearson

Reference Books:

1. Data Structures and Algorithms by A.V. Aho, J.E. Hopcroft and T.D. Ullman, Original edition, Addison-Wesley, 1999, Low Priced Edition.
2. Fundamentals of Data structures by Ellis Horowitz & Sartaj Sahni, Pub, 1983,AW
3. Fundamentals of computer algorithms by Horowitz Sahni and Rajasekaran.
4. Data Structures and Program Design in C By Robert Kruse, PHI,
5. Theory & Problems of Data Structures by Jr. Seymour Lipschetz, Schaum's outline by TMH
6. Introduction to Computers Science -An algorithms approach , Jean Paul Tremblay, Richard B. Bunt, 2002, T.M.H.
7. Data Structure and the Standard Template library – Willam J. Collins, 2003, T.M.H

L T P
3 1 -

Class Work marks : 50
Theory marks : 100
Total marks : 150
Duration of Exam : 3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A: Set Theory and Propositional Calculus:

Introduction to set theory, Set operations, Algebra of sets, Duality, Finite and Infinite sets, Classes of sets, Power Sets, Multi sets, Cartesian Product, Representation of relations, Types of relation, Equivalence relations and partitions, Partial ordering relations and lattices.
Function and its types, Composition of function and relations, Cardinality and inverse relations.

Introduction to propositional Calculus: Basic operations: AND (\wedge), OR (\vee), NOT (\sim), Truth value of a compound statement, propositions, tautologies, contradictions.

Section B: Techniques of Counting and Recursion and recurrence Relation:

Permutations with and without repetition, Combination. Polynomials and their evaluation, Sequences, Introduction to AP, GP and AG series, partial fractions, linear recurrence relation with constant coefficients, Homogeneous solutions, Particular solutions, Total solution of a recurrence relation using generating functions.

Section C: Algebraic Structures

Definition and examples of a monoid, Semigroup, Groups and rings, Homomorphism, Isomorphism and Automorphism, Subgroups and Normal subgroups, Cyclic groups, Integral domain and fields, Cosets, Lagrange's theorem

Section D: Section Graphs and Trees:

Introduction to graphs, Directed and Undirected graphs, Homomorphic and Isomorphic graphs, Subgraphs, Cut points and Bridges, Multigraph and Weighted graph, Paths and circuits, Shortest path in weighted graphs, Eulerian path and circuits, Hamilton paths and circuits, Planar graphs, Euler's formula, Trees, Spanning trees, Binary trees and its traversals

Text Book:

1. Elements of Discrete Mathematics C.L Liu, 1985, McGraw Hill

Reference Books:

1. Discrete Mathematics by Johnson Bough R., 5th Edition, PEA, 2001..
2. Concrete Mathematics: A Foundation for Computer Science, Ronald Graham, Donald Knuth and Oren Patashik, 1989, Addison-Wesley.
3. Mathematical Structures for Computer Science, Judith L. Gersting, 1993, Computer Science Press.
4. Applied Discrete Structures for Computer Science, Doerr and Levasseur, (Chicago: 1985,SRA
5. Discrete Mathematics by A. Chtewynd and P. Diggle (Modular Mathematics series), 1995, Edward Arnold, London,
6. Schaums Outline series: Theory and problems of Probability by S. Lipshutz, 1982, McGraw-Hill Singapore
7. Discrete Mathematical Structures, B. Kolman and R.C. Busby, 1996, PHI
8. Discrete Mathematical Structures with Applications to Computers by Tembley & Manohar, 1995, Mc Graw Hill.

L T P
3 1 -

Class Work marks : 50
Theory marks : 100
Total marks : 150
Duration of Exam : 3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section - A: Communication system components:

Introduction to Communication: Definition & means of communications; Digital and analog signals: sign waves, square waves; Properties of signals: amplitude, frequency, phase; Theoretical basis for data communication: Fourier analysis: Fourier series and Fourier Transform (property, ESD, PSD and Raleigh) effect of limited bandwidth on digital signal.

Section - B: Data Transmission System:

Physical connections: modulation, amplitude-, frequency-, phase- modulation; Data encoding: binary encoding (NRZ), Manchester encoding, differential Manchester encoding.
Transmission Media: Twisted pair-, co-axial-, fiber optic-cables, wireless media
Transmission impairments: attenuation, limited bandwidth of the channels, delay distortion, noise, data rate of the channels (Nyquist theorem, Shannon limit). Physical layer interfaces: RS 232, X.21

Section - C: Standards in data communications:

Communication modes: simplex, half duplex, full duplex; Transmission modes: serial-, parallel-transmission; Synchronizations: Asynchronous-, synchronous-transmission; Type of services: connection oriented-, connectionless-services; Flow control: unrestricted simplex protocol, simplex stop- and -wait protocol, sliding window protocol; Switching systems: circuit switching; picketing switching: data gram , virtual circuits, permanent virtual circuits.
Telephone Systems: PSTN, ISDN, asynchronous digital subscriber line.
Multiplexing: frequency division-, time-, wave- division multiplexing

Section - D: Security in data communications:

Transmission errors: feedback-, forward-error control approaches; Error detection; Parity check, block sum check, frame check sequences; Error correction: hamming codes, cyclic redundancy check; Data encryption: secret key cryptography, public key cryptograph; Data compression: run length encoding, Huffman encoding.

Text Book:

1. Data Communications, Computer Networks and Open Systems Halsall Fred, (4th editon) 2000, Addison Wesley, Low Price edition

Reference Books:

1. Business Data Communications, Fitzgerald Jerry, 7th Ed. New York, 2001, JW&S,
2. Communication Systems, 4th Edi, by A. Bruce Carlson, Paul B. Crilly, Janet C. Rutledge, 2002, TMH.
3. Data Communications, Computer Networks and Open Systems, Halsall Fred, 1996, AW.
4. Digital Communications, J.G. Proakiss, 4th Ed., MGH
5. Satellite Communication, Pratt, John Wiley
6. Data & Computer Communications, W.Stallings PHI
7. Digital & Data Communication systems, Roden 1992, PHI,
8. Introduction to Digital & Data Communications, Miller Jaico Pub.
9. Data Communications and Networking, Behrouz A. Forouzan, 2003, 2nd Edition, T.M.H

EE-204-F

DIGITAL ELECTRONICS

L T P
3 1 0

Class Work marks : 50
Theory marks : 100
Total marks : 150
Duration of Exam : 3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

SECTION - A

Digital system and binary numbers: Signed binary numbers, binary codes, cyclic codes, error detecting and correcting codes, hamming codes.

Gate-level minimization: The K-map method up to five variable, don't care conditions, POS simplification, NAND and NOR implementation, Quine Mc-Clusky method (Tabular method)

SECTION - B

Combinational Logic: Combinational circuits, analysis procedure, design procedure, binary adder-subtractor, decimal adder, binary multiplier, magnitude comparator, decoders, encoders, multiplexers ,demultiplexers

SECTION – C

Synchronous Sequential logic: Sequential circuits, storage elements: latches, flip flops, analysis of clocked sequential circuits, state reduction and assignments, design procedure. Registers and counters: Shift registers, ripple counter, synchronous counter, other counters

SECTION- D

Memory and programmable logic: RAM, ROM, PLA, PAL. Design at the register transfer level: ASMs, design example, design with multiplexers. Asynchronous sequential logic: Analysis procedure, circuit with latches, design procedure, reduction of state and flow table, race Free State assignment, hazards

Text Book:

1. M. Morris Mano and M. D. Ciletti, "Digital Design", 4th Edition, Pearson Education
2. Pedroni - Digital Electronics & Design, Elsevier
3. R.P. Jain , "Modern digital electronics" , 3rd edition , 12th reprint TMH Publication, 2007.
4. Digital Design and computer organization: Nasib Singh Gill & J. B. Dixit

REFERENCE BOOKS :

1. Grout - Digital Design using FPGA'S & CPLD's, Elsevier
2. F.Vahid: Digital Design: Wiley Student Edition, 2006
3. J. F. Wakerly, Digital Design Principles and Practices, Fourth Edition, Prentice-Hall, 2005.
4. R. L. Tokheim, Digital electronics, Principles and applications, 6th Edition, Tata McGraw Hill Edition, 2003

HUM-203-F

FUNDAMENTALS OF MANAGEMENT

L T P
3 1 0

Class Work marks : 50
Theory marks : 100
Total marks : 150
Duration of Exam : 3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section – A

Meaning of management, Definitions of Management, Characteristics of management, Management Vs. Administration. Management-Art, Science and Profession. Importance of Management. Development of Management thoughts.
Principles of Management. The Management Functions, Inter-relationship of Managerial functions.
Nature and Significance of staffing, Personnel management, Functions of personnel management, Manpower planning, Process of manpower planning, Recruitment, Selection; Promotion - Seniority Vs. Merit. Training - objectives and types of training.

Section - B

Production Management : Definition, Objectives, Functions and Scope, Production Planning and Control; its significance, stages in production planning and control. Brief introduction to the concepts of material management, inventory control; its importance and various methods.

Section - C

Marketing Management - Definition of marketing, Marketing concept, objectives & Functions of marketing.
Marketing Research - Meaning; Definition; objectives; Importance; Limitations; Process. Advertising - meaning of advertising, objectives, functions, criticism.

Section – D

Introduction of Financial Management, Objectives of Financial Management, Functions and Importance of Financial Management. Brief Introduction to the concept of capital structure and various sources of finance.

BOOKS RECOMMENDED :

TEXT BOOKS :

1. Principles and Practice of Management - R.S. Gupta, B.D.Sharma, N.S. Bhalla. (Kalyani Publishers)
2. Organisation and Management - R.D. Aggarwal (Tata Mc Graw Hill)

REFERENCE BOOKS :

1. Principles & Practices of Management – L.M. Prasad (Sultan Chand & Sons)
2. Management – Harold, Koontz and Cyrilo Donell (Mc.Graw Hill).
3. Marketing Management – S.A. Sherlikar (Himalaya Publishing House, Bombay).
4. Financial Management - I.M. Pandey (Vikas Publishing House, New Delhi)
5. Management - James A.F. Stoner & R.Edward Freeman, PHI.

IT-201 F**PC Lab.**

L T P

- - 3

Class Work : 50

Exam : 50

Total : 100

Duration of Exam : 3 hr

PC Software: Application of basics of MS Word 2000, MS Excel 2000, MS Power Point 2000, MS Access 2000.

1. To prepare the Your Bio Data using MS Word
2. To prepare the list of marks obtained by students in different subjects and show with the help of chart/graph the average, min and max marks in each subject.
3. Prepare a presentation explaining the facilities/infrastructure available in your college/institute.
4. Create a database of books in the library on a mini scale w.r.t. Computers and manipulate the database using different forms and reports.

PC Hardware :

1. To check and measure various supply voltages of PC.
2. To make comparative study of motherboards.
3. To observe and study various cables, connections and parts used in computer communication.
4. To study various cards used in a system viz. display card, LAN card etc.
5. To remove, study and replace floppy disk drive.
6. To remove, study and replace hard disk.
7. To remove, study and replace CD ROM drive.
8. To study monitor, its circuitry and various presents and some elementary fault detection.
9. To study printer assembly and elementary fault detection of DMP and laser printers.
10. To observe various cables and connectors used in networking.
11. To study parts of keyboard and mouse.
12. To assemble a PC.
13. Troubleshooting exercises related to various components of computer like monitor, drives, memory and printers etc.

Reference Books:

1. Complete PC upgrade & maintenance guide, Mark Mines, BPB publ.
2. PC Hardware: The complete reference, Craig Zacker & John Rouske, TMH
3. Upgrading and Repairing PCs, Scott Mueller, 1999, PHI,

Note: At least 5 to 10 more exercises to be given by the teacher concerned.

1. Write a program to search an element in a two-dimensional array using linear search.
2. Using iteration & recursion concepts write programs for finding the element in the array using Binary Search Method
3. Write a program to perform following operations on tables using functions only a) Addition b) Subtraction c) Multiplication d) Transpose
4. Using iteration & recursion concepts write the programs for Quick Sort Technique
5. Write a program to implement the various operations on string such as length of string concatenation, reverse of a string & copy of a string to another.
6. Write a program for swapping of two numbers using 'call by value' and 'call by reference' strategies.
7. Write a program to implement binary search tree.(Insertion and Deletion in Binary search Tree)
8. Write a program to create a linked list & perform operations such as insert, delete, update, reverse in the link list
9. Write the program for implementation of a file and performing operations such as insert, delete, update a record in the file.
10. Create a linked list and perform the following operations on it a) add a node b) Delete a node
11. Write a program to simulate the various searching & sorting algorithms and compare their timings for a list of 1000 elements.
12. Write a program to simulate the various graph traversing algorithms.
13. Write a program which simulates the various tree traversal algorithms.

Note: At least 5 to 10 more exercises to be given by the teacher concerned.

Objective: To understand the digital logic and create various systems by using these logics.

1. Introduction to digital electronics lab- nomenclature of digital ICs, specifications, study of the data sheet, concept of V_{cc} and ground, verification of the truth tables of logic gates using TTL ICs.
2. Implementation of the given Boolean function using logic gates in both SOP and POS forms.
3. Verification of state tables of RS, JK, T and D flip-flops using NAND & NOR gates.
4. Implementation and verification of Decoder/De-multiplexer and Encoder using logic gates.
5. Implementation of 4x1 multiplexer using logic gates.
6. Implementation of 4-bit parallel adder using 7483 IC.
7. Design, and verify the 4-bit synchronous counter.
8. Design, and verify the 4-bit asynchronous counter.
9. Static and Dynamic Characteristic of NAND and Schmitt-NAND gate(both TTL and MOS)
10. Study of Arithmetic Logic Unit.
11. Mini Project.

NOTE : Ten experiments are to be performed, out of which at least seven experiments should be performed from above list. Remaining three experiments may either be performed from the above list or designed & setup by the concerned institution as per the scope of the syllabus.