SCHEME OF STUDIES & EXAMINATION FOR

B. TECH.

COMPUTER SCIENCE & INFORMATION TECHNOLOGY

M.D.UNIVERSITY, ROHTAK (HARYANA)
SCHEME OF STUDIES & EXAMINATION FOR BACHELOR OF TECHNOLOGY
COURSE IN
COMPUTER SCIENCE & INFORMATION TECHNOLOGY
Semester-III

'F' Scheme effective from 2011-12

SNo	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam
			L	T	P	Total	Class work	Theory	Practical	Total	
1	MATH-201-F	Mathematics III	3	2	-	5	50	100	-	150	3
2	CSE-201-F	Data Structures Using'C'	3	1	-	4	50	100	-	150	3
3	CSE-203-F	Discrete Structures	3	1	-	4	50	100	-	150	3
4	EE-204-F	Digital Electronics	3	1	-	4	50	100	-	150	3
5	HUM-203-F	Fundamentals of Management	3	1	-	4	50	100	-	150	3
6	IT-202-F	Object Oriented Programming Using C++	3	1	-	4	50	100	-	150	3
7	CSE-205-F	Data Structures Using'C' Lab	-	-	2	2	25	-	25	50	3
8	EE-224-F	Digital Electronics Lab	-	-	3	3	50	-	50	100	3
9	IT-206-F	C++ Programming Lab	-	-	2	2	50	-	50	100	3
		TOTAL	18	7	7	32	425	600	125	1150	

NOTE:
1. Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.

M.D.UNIVERSITY, ROHTAK (HARYANA)
SCHEME OF STUDIES & EXAMINATION FOR BACHELOR OF TECHNOLOGY COURSE IN
COMPUTER SCIENCE & INFORMATION TECHNOLOGY
Semester-IV

'F' Scheme effective from 2011-12

SNo	Course No.	Subject	Teaching Schdedule				Examination Schedule (Marks)				Duration of Exam
			L	T	P	Total	Class work	Theory	Practical	Total	
1	CSE-202-F	Database Management Systems	3	1	-	4	50	100	-	150	3
2	CSE-208-F	Internet Fundamentals	3	1	-	4	50	100	-	150	3
3	CSE-204-F	Programming Language	3	1	-	4	50	100	-	150	3
4	CSIT-201	Analog Electronics	3	1	-	4	50	100	-	150	3
5	CSE-210-F	Computer Architecture & Organization	3	1	-	4	50	100	-	150	3
6	IT-204-F	Multimedia Technologies	3	1	-	4	50	100	-	150	3
7	CSE-212-F	DBMS Lab	-	-	3	3	50	-	50	100	3
8	IT-208-F	Multimedia Technologies Lab	-	-	2	2	25	-	25	50	3
9	CSE-214-F	Internet Lab	-	-	2	2	25	-	25	50	3
10	GP-202-F	General Proficiency	-	-	2	2	50	-		50	3
		TOTAL	18	6	9	33	450	600	100	1150	

NOTE:
1. Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.

2. Each student has to undergo practical training of 6 weeks during summer vacation and its evaluation shall be carried out in the V semester.

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SEMESTER-V
'F' Scheme effective from 2011-12

SNo	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam
			L	T	P	Total	Class work	Theory	Practical	Total	
1	CSE-301-F	Principles of Operating Systems	3	1	-	4	50	100	-	150	3
2	EE-309-F	Microprocessors & Interfacing	3	1	-	4	50	100	-	150	3
3	CSE-303-F	Computer Graphics	3	1	-	4	50	100	-	150	3
4	CSE-404-F	Advance JAVA	3	1	-	4	50	100	-	150	3
5	HUM-453-F	Human Resource Management	3	1	-	4	50	100	-	150	3
6	EE-217-F	Digital & Analog Communication	3	1	-	4	50	100	-	150	3
7	EE-329-F	Microprocessor & Interfacing Lab	-	-	2	2	25	-	25	50	3
8	CSE-309-F	Computer Graphics Lab	-	-	2	2	50	-	50	100	3
9	CSE-406-F	Advance JAVA Lab	-	-	2	2	50	-	50	100	3
10	CSE-315-F	Practical Training-I	-	-	2	2	-	-	-	-	-
		TOTAL	18	6	8	32	425	600	125	1150	

NOTE:
1. Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.
2. Assessment of Practical Training-I, undergone at the end of IV semester, will be based on seminar, viva-voce, report and certificate of practical training obtained by the student from the industry. According to performance letter grades A, B, C, F are to be awarded. A student who is awarded 'F' grade is required to repeat Practical Training.

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COMPUTER SCIENCE & INFORMATION TECHNOLOGY

SEMESTER-VI

'F' Scheme effective from 2011-12

SNo	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam
			L	T	P	Total	Class work	Theory	Practical	Total	
1	CSE-302-F	Principles of Software Engineering	3	1	-	4	50	100	-	150	3
2	CSE-304-F	Intelligent Systems	3	1	-	4	50	100	-	150	3
3	IT-305-F	Computer Networks	3	1	-	4	50	100	-	150	3
4	IT-303-F	System Programming and System Administration	3	1	-	4	50	100	-	150	3
5	CSE-206-F	Theory of Automata Computation	3	1	-	4	50	100	-	150	3
6	EE-402-F	Wireless Communication	3	1	-	4	50	100	-	150	3
7	CSE-306-F	Intelligent System Lab	-	-	3	3	25	-	25	50	3
8	CSIT-301-F	UNIX Lab	-	-	3	3	50	-	50	100	3
9	GP-302-F	General Proficiency	-	-	2	2	50	-	-	50	3
		TOTAL	18	6	8	32	425	600	75	1100	

NOTE:
1. **Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.**
2. **Each student has to undergone practical training of 6 weeks during summer vacation and its evaluation shall be carried out in the VII semester.**

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SEMESTER-VII

'F' Scheme effective from 2011-12

SNo	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam
			L	T	P	Total	Class work	Theory	Practical	Total	
1	CSE-405-F	Compiler Design	3	1	-	4	50	100	-	150	3
2	IT-401-F	Data Warehousing & Data Mining	3	1	-	4	50	100	-	150	3
3	CSE-407-F	Neural Network	3	1	-	4	50	100	-	150	3
4	CSE-401-F	Advance Computer Architecture	3	1	-	4	50	100	-	150	3
5		**Elective-I ***	3	1	-	4	50	100	-	150	3
6	CSE-411-F	Compiler Design Lab	-	-	3	3	50	-	50	100	3
7	CSE-409-F	Visual Programming Lab	-	-	3	3	50	-	50	100	3
8	CSE-315-F	Practical Training-II	-	-	2	2	-	-	-	-	3
9	CSE-413-F	Project	-	-	4	4	50		50	100	3
		TOTAL	15	5	12	32	400	500	150	1050	

NOTE:

1. Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.

2. *Student will be permitted to opt for any one elective run by the other departments. However, the departments will offer only those electives for which they have expertise. The choice of the students for any elective shall not be a binding for the department to offer, if the department does not have expertise.

3. Assessment of Practical Training-I, undergone at the end of IV semester, will be based on seminar, viva-voce, report and certificate of practical training obtained by the student from the industry. According to performance letter grades A, B, C, F are to be awarded. A student who is awarded 'F' grade is required to repeat Practical Training.

4. Project load will be treated as 2 hours per week for Project Coordinator and 1 hour for each participating teacher. Project will commence in VII semester where the students will identify the Project problem, complete the design/procure the material/start the fabrication/complete the survey etc., depending upon the nature of the problem. Project will continue in VIII semester.

Elective-I

1. PHY-451-F   NANO Technology
2. HUM-457-F   Business Communication
3. CSIT-404   Parallel Computation & Applications
4. CSE-432-F   Digital Image Processing
5. CSE-403-F   Software Project Management
6. CSIT-401-F   Mobile Computing
7. CSIT-402-F   Cyber Crime Investigation & Cyber Forensics
8. IT-471-F   Management Information System
9. CH-453-F   Pollution & Control

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SEMESTER-VIII
'F' Scheme effective from 2011-12

SNo	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam
			L	T	P	Total	Class work	Theory	Practical	Total	
1	CSE-305-F	Analysis and Design of Algorithms	3	1	-	4	50	100	-	150	3
2	IT-403-F	System & Network Administration	3	1	-	4	50	100	-	150	3
3		**Elective-I**	3	1	-	4	50	100	-	150	3
4		**Elective-II**	3	1	-	4	50	100	-	150	3
5	IT-407-F	SNA Lab	-	-	3	3	50	-	50	100	3
6	CSIT-410-F	Seminar	-	-	4	4	50	-	-	50	3
7	CSE-413-F	Project	-	-	8	8	100	-	100	200	3
8	GFCSE-402-F	General Proficiency	-	-	-	-	50	-	100	150	
		TOTAL	12	4	15	31	450	400	250	1100	

NOTE:-
1. Students will be allowed to use the non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.
2. A team consisting of Principal/Director, HOD of concerned department and external examiner appointed by University shall carry out the evaluation of the student for his/her General Fitness for the Profession.
3. Project load will be treated as 2 hrs. per week for the project coordinator and 1 hour for each participating teacher. Project involving design, fabrication, testing, computer simulation, case studies etc., which has been commenced by students in VII semester, will be completed in VIII semester.

Elective-I
1. IT-405-F   Introduction to E-Commerce & ERP
2. IT-464-F   Network Security Management
3. IT-465-F   Network Technology
4. IT-467-F   Software Testing
5. IT-472-F   Introduction to VLSI Design
6. CSIT-406-F   Soft Computing
7. CSIT-409-F   Grid Computing
8. CSE-402-F   Distributed Operating Systems
9. HUM-451-F   Language Skill for Engineers

Elective-II

1. CSE-448-F   Object Oriented System Development
2. CSE-444-F   Fuzzy Logic
3. CSE-446-F   Natural Language Processing
4. CSE-442-F   Human Computer Interaction
5. IT-468-F   Logic & Functional Programming
6. IT-470-F   Web Engineering
7. IC-403-F   Embedded System Design
8. CSIT-403-F   Software Quality Assurance
9. CSIT-405-F   Information Storage & Management

MATH-201-F   **MATHEMATICS-III**

L T P   Class Work marks: 50
3 2 0   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 Transforms : 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 consine 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, Logrithmic 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. Zeroes 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 statistics for Engineers : Johnson and. PHI

CSE-201-F   **DATA STRUCTURES USING 'C'**
                      (CSE, EL, ECE, IT, ECE)

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                         Total Marks: 150
                                         Duration of Exam: 3 Hrs.

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 Files 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:
- Data Structures using C by A. M. Tenenbaum, Langsam, Moshe J. Augentem, PHI Pub.
- Data Structures using C by A. K. Sharma, Pearson.

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

CSE-203-F   **DISCRETE STRUCTURES**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                          Total Marks: 150
                                                          Duration of Exam: 3 Hrs.

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(v), 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, Semi group, 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, Sub graphs, Cut points and Bridges, Multigraph and Weighted graph, Paths and circuits, Shortest path in weighted graphs, Eurelian 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.

EE-204-F　　　　　　　　　**DIGITAL ELECTRONICS**

L T P

3 1 0

Class Work Marks: 50
Exam Marks: 100
Total Marks: 150
Duration of Exam: 3 Hrs.

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, and 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:

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

REFERENCE BOOKS:

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

HUM-203-F   **FUNDAMENTALS OF MANAGEMENT**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                    Total Marks: 150
                                                    Duration of Exam: 3 Hrs.

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.

TEXT BOOKS:

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

REFERENCE BOOKS :

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

IT-202 F   **OBJECT ORIENTED PROGRAMMING USING C++**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                         Total Marks: 150
                                                         Duration of Exam: 3 Hrs.

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: Introduction to C++ and Object oriented Concepts

C++ Standard Library, Basics of a Typical C++ Environment, Pre-processors Directives, illustrative Simple C++ Programs. Header Files and Namespaces, library files. Introduction to Objects and Object Oriented Programming, Encapsulation (Information Hiding), Access Modifiers: Controlling access to a class, method, or variable (public, protected, private, package), Other Modifiers, Polymorphism: Overloading,, Inheritance, Overriding Methods, Abstract Classes, Reusability, Class's Behaviors.

Section B: Classes and Data Abstraction:

Introduction, Structure Definitions, Accessing Members of Structures, Class Scope and accessing Class Members, Separating Interface from Implementation, Controlling Access Function And Utility Functions, Initializing Class Objects: Constructors, Using Default Arguments With Constructors, Using Destructors, Classes : Const(Constant) Object And Const Member Functions, Object as Member of Classes, Friend Function and Friend Classes, Using This Pointer, Dynamic Memory Allocation with New and Delete, Static Class Members, Container Classes And Integrators, Proxy Classes, Function overloading.

Section C: Operator Overloading, Inheritance, and Virtual Functions and Polymorphism:

Fundamentals of Operator Overloading, Restrictions On Operators Overloading, Operator Functions as Class Members vs. as Friend Functions, Overloading, <<, >> Overloading Unary Operators, Overloading Binary Operators. Introduction to Inheritance, Base Classes And Derived Classes, Protected Members, Casting Base- Class Pointers to Derived- Class Pointers, Using Member Functions, Overriding Base – Class Members in a Derived Class, Public, Protected and Private Inheritance, Using Constructors and Destructors in derived Classes, Implicit Derived –Class Object To Base- Class Object Conversion, Composition Vs. Inheritance. Introduction to Virtual Functions, Abstract Base Classes And Concrete Classes, Polymorphism, New Classes And Dynamic Binding, Virtual Destructors, Polymorphism, Dynamic Binding.

Section D: Files and I/O Streams and Templates and Exception Handling:

Files and Streams, Creating a Sequential Access File, Reading Data From A Sequential Access File, Updating Sequential Access Files, Random Access Files, Creating A Random Access File, Writing Data Randomly To a Random Access File, Reading Data Sequentially from a Random Access File. Stream Input/Output Classes and Objects, Stream Output, Stream Input, Unformatted I/O (with read and write), Stream Manipulators, Stream Format States, Stream Error States.

Function Templates, Overloading Template Functions, Class Template, Class Templates and Non-Type Parameters, Templates and Inheritance, Templates and Friends, Templates and Static Members.

Introduction, Basics of C++ Exception Handling: Try Throw, Catch, Throwing an Exception, Catching an Exception, Rethrowing an Exception, Exception specifications, Processing Unexpected Exceptions, Stack Unwinding, Constructors, Destructors and Exception Handling, Exceptions and Inheritance.

TEXT BOOKS:

- C++ How to Program by H M Deitel and P J Deitel, 1998, Prentice Hall
- Object Oriented Programming in Turbo C++ by Robert Lafore, 1994, The WAITE Group Press.
- Programming with C++ By D Ravichandran, 2003, T.M.H

REFERENCE BOOKS:

- Object oriented Programming with C++ by E Balagurusamy, 2001, Tata McGraw-Hill
- Computing Concepts with C++ Essentials by Horstmann, 2003, John Wiley,
- The Complete Reference in C++ By Herbert Schildt, 2002, TMH.

CSE-205-F **DATA STRUCTURES USING 'C' LAB**

L T P
0 0 2

Class Work Marks: 25
Exam Marks: 25
Total Marks: 50
Duration of exam: 3 hrs

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.

EE-224-F　　　　　　　　**DIGITAL ELECTRONICS LAB**

L T P		Class Work Marks:	50
0 0 3		Exam Marks:	50
		Total Marks:	100
		Duration of exam:	3 hrs

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 Vcc 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.

IT-206-F   **C ++ PROGRAMMING LAB.**

L T P   Class Work Marks: 50
0 0 2   Exam Marks: 50
                                        Total Marks: 100
                                        Duration of exam: 3 hrs

Q1. Raising a number n to a power p is the same as multiplying n by itself p times. Write a function called power ( ) that takes a double value for n and an int value for p, and returns the result as double value. Use a default argument of 2 for p, so that if this argument is omitted, the number will be squared. Write a main ( ) function that gets values from the user to test this function.

Q2. A point on the two dimensional plane can be represented by two numbers: an X coordinate and a Y coordinate. For example, (4,5) represents a point 4 units to the right of the origin along the X axis and 5 units up the Y axis. The sum of two points can be defined as a new point whose X coordinate is the sum of the X coordinates of the points and whose Y coordinate is the sum of their Y coordinates.
Write a program that uses a structure called point to model a point. Define three points, and have the user input values to two of them. Than set the third point equal to the sum of the other two, and display the value of the new point. Interaction with the program might look like this:
Enter coordinates for P1: 3 4
Enter coordinates for P2: 5 7
Coordinates of P1 + P2 are: 8, 11

Q3. Create the equivalent of a four function calculator. The program should request the user to enter a number, an operator, and another number. It should then carry out the specified arithmetical operation: adding, subtracting, multiplying, or dividing the two numbers. (It should use a switch statement to select the operation). Finally it should display the result. When it finishes the calculation, the program should ask if the user wants to do another calculation. The response can be 'Y' or 'N'. Some sample interaction with the program might look like this.
Enter first number, operator, second number: 10/ 3
Answer = 3.333333
Do another (Y/ N)? Y
Enter first number, operator, and second number 12 + 100
Answer = 112
Do another (Y/ N)? N

Q4. A phone number, such as (212) 767-8900, can be thought of as having three parts: the area code (212), the exchange (767) and the number (8900). Write a program that uses a structure to store these three parts of a phone number separately. Call the structure phone. Create two structure variables of type phone. Initialize one, and have the user input a number for the other one. Then display both numbers. The interchange might look like this:
Enter your area code, exchange, and number: 415 555 1212
My number is (212) 767-8900
Your number is (415) 555-1212

Q5. Create two classes DM and DB which store the value of distances. DM stores distances in metres and centimeters and DB in feet and inches. Write a program that can read values fortheclass objects and add one object of DM with another object of DB. Use a friend function to carry out the addition operation. The object that stores the results maybe a DM object or DB object, depending on the units in which the results are required. The display should be in the format of feet and inches or metres and cenitmetres depending on the object on display.

Q6. Create a class rational which represents a numerical value by two double values- NUMERATOR & DENOMINATOR. Include the following public member Functions:
* Constructor with no arguments (default).
* Constructor with two arguments.
* void reduce( ) that reduces the rational number by eliminating the highest common factor between the numerator and denominator.
* Overload + operator to add two rational number.
* Overload >> operator to enable input through cin.
* Overload << operator to enable output through cout.
* Write a main ( ) to test all the functions in the class.

Q7. Consider the following class definition
class father {
protected : int age;
public;
father (int x) {age = x;}
virtual void iam ( )
{ cout < < "I AM THE FATHER, my age is : "<< age<< end1:}
};
Derive the two classes son and daughter from the above class and for each, define iam ( ) to write our similar but appropriate messages. You should also define suitable constructors for these classes.
Now, write a main ( ) that creates objects of the three classes and then calls iam ( ) for them. Declare pointer to father. Successively, assign addresses of objects of the two derived classes to this pointer and in each case, call iam ( ) through the pointer to demonstrate polymorphism in action.

Q8. Write a program that creates a binary file by reading the data for the students from the terminal. The data of each student consist of roll no., name (a string of 30 or lesser no. of characters) and marks.

Q9. A hospital wants to create a database regarding its indoor patients. The information to store include
a) Name of the patient
b) Date of admission
c) Disease
d) Date of discharge
Create a structure to store the date (year, month and date as its members). Create a base class to store the above information. The member function should include functions to enter information and display a list of all the patients in the database. Create a derived class to store the age of the patients. List the information about all the to store the age of the patients. List the information about all the pediatric patients (less than twelve years in age).

Q10. Make a class **Employee** with a name and salary. Make a class **Manager** inherit from **Employee**. Add an instance variable, named department, of type string. Supply a method to **toString** that prints the manager's name, department and salary. Make a class **Executive** inherit from **Manager**. Supply a method **to String** that prints the string **"Executive"** followed by the information stored in the **Manager** superclass object. Supply a test program that tests these classes and methods.

Q11. Imagine a tollbooth with a class called toll Booth. The two data items are a type unsigned int to hold the total number of cars, and a type double to hold the total amount of money collected. A constructor initializes both these to 0. A member function called payingCar ( ) increments the car total and adds 0.50 to the cash total. Another function, called nopayCar ( ), increments the car total but adds nothing to the cash total. Finally, a member function called displays the two totals. Include a program to test this class. This program should allow the user to push one key to count a paying car, and another to count a nonpaying car. Pushing the ESC kay should cause the program to print out the total cars and total cash and then exit.

Q12. Write a function called reversit ( ) that reverses a string (an array of char). Use a for loop that swaps the first and last characters, then the second and next to last characters and so on. The string should be passed to reversit ( ) as an argument. Write a program to exercise reversit ( ). The program should get a string from the user, call reversit ( ), and print out the result. Use an input method that allows embedded blanks. Test the program with Napoleon's famous phrase, "Able was I ere I saw Elba)".

Q13. Create some objects of the string class, and put them in a Deque-some at the head of the Deque and some at the tail. Display the contents of the Deque using the forEach ( ) function and a user written display function. Then search the Deque for a particular string, using the first That ( ) function and display any strings that match. Finally remove all the items from the Deque using the getLeft ( ) function and display each item. Notice the order in which the items are displayed: Using getLeft ( ), those inserted on the left (head) of the Deque are removed in "last in first out" order while those put on the right side are removed in "first in first out" order. The opposite would be true if getRight ( ) were used.

Q14. Create a base class called shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base class, a member function get_data ( ) to initialize base class data members and another member function display_area ( ) to compute and display the area of figures. Make display_area ( ) as a virtual function and redefine this function in the derived classes to suit their requirements. Using these three classes, design a program that will accept dimensions of a triangle or a rectangle interactively and display the area. Remember the two values given as input will be treated as lengths of two sides in the case of rectangles and as base and height in the case of triangles and used as follows:
Area of rectangle = x * y
Area of triangle = ½ * x * y

CSE-202-F **DATABASE MANAGEMENT SYSTEMS**

L T P

3 1 0

Class Work Marks: 50

Exam Marks: 100

Total Marks: 150

Duration of Exam: 3 Hrs.

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: Introduction, Client Server Arch., E-R Diagram and Keys

Overview of database Management System; Various views of data, data Models, Introduction to Database Languages. Advantages of DBMS over file processing systems, Responsibility of Database Administrator, Introduction to Client/Server architecture, Three levels architecture of Database Systems, ER Diagram (Entity Relationship), mapping Constraints, Keys, Reduction of E-R diagram into tables.

Section B: File Organization and Relational Model and Calculus

Sequential Files, index sequential files, direct files, Hashing, B-trees Index files.Relational Model, Relational Algebra & various operations, Relational and Tuple calculus.

Section C: Introduction to Query Languages

QLB, QBE, Structured query language – with special reference of (SQL of ORACLE), integrity constraints, functional dependencies & NORMALISATION – (up to 4th Normal forms), BCNF (Boyce – code normal forms)

Section D

Introduction to Distributed Data processing, parallel Databases, data mining & data warehousing, network model & hierarchical model, Introduction to transaction, properties of transaction and life cycle of transaction, Introduction to Concurrency control and Recovery systems., need of concurrency control and recovery system, problems in concurrent transactions.

TEXT BOOKS:

1. Database System Concepts by A. Silberschatz, H.F. Korth and S. Sudarshan, 3rd edition, 1997, McGraw-Hill, International Edition.

2. Introduction to Database Management system by Bipin Desai, 1991, Galgotia Pub.

REFERENCE BOOKS:

1. Fundamentals of Database Systems by R. Elmasri and S.B. Navathe, 3rd edition, 2000, Addision-Wesley, Low Priced Edition.
2. An Introduction to Database Systems by C.J. Date, 7th edition, Addison-Wesley, Low Priced Edition, 2000.
3. Database Management and Design by G.W. Hansen and J.V. Hansen, 2nd edition, 1999, Prentice-Hall of India, Eastern Economy Edition.
4. Database Management Systems by A.K. Majumdar and P. Bhattacharyya, 5th edition, 1999, Tata McGraw-Hill Publishing.
5. A Guide to the SQL Standard, Date, C. and Darwen,H. 3rd edition, Reading, MA: 1994, Addison-Wesley.
6. Data Management & file Structure by Looms, 1989, PHI

CSE-208-F   **INTERNET FUNDAMENTALS**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                              Total Marks: 150
                                              Duration of Exam: 3 Hrs.

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: Electronic Mail and Internet:

Introduction, advantages and disadvantages, Userids, Pass words, e-mail addresses, message components, message composition, mailer features, E-mail inner workings, E-mail management, Mime types, Newsgroups, mailing lists, chat rooms. Introduction to networks and internet, history, working of Internet, Internet Congestion, internet culture, business culture on internet. Collaborative computing & the internet. Modes of Connecting to Internet, Internet Service Providers(ISPs), Internet address, standard address, domain name, DNS, IP.v6.Modems and time continuum, communications software; internet tools.

Section B: World Wide Web:

Introduction, Miscellaneous Web Browser details, searching the www: Directories search engines and Meta search engines, search fundamentals, search strategies, working of the search engines, Telnet and FTP. Introduction to Browser, Coast-to-coast surfing, hypertext markup language, Web page installation, Web page setup, Basics of HTML & formatting and hyperlink creation. Using FrontPage Express, Plug-ins.

Section C: Languages:

Basic and advanced HTML, java script language, Client and Server Side Programming in java script. Forms and data in java script, XML basics. Introduction to Web Servers: PWS, IIS, Apache; Microsoft Personal Web Server. Accessing & using these servers.

Section D: Privacy and security topics:

Introduction, Software Complexity, Encryption schemes, Secure Web document, Digital Signatures, Firewalls.

TEXT BOOK:
- Fundamentals of the Internet and the World Wide Web, Raymond Greenlaw and Ellen Hepp – 2001, TMH
- Internet & World Wide Programming, Deitel, Deitel & Nieto, 2000, Pearson Education

REFERENCE BOOKS:
- Complete idiots guide to java script,. Aron Weiss, QUE, 1997
- Network firewalls, Kironjeet syan -New Rider Pub.
- www.secinf.com
- www.hackers.com
- Alfred Glkossbrenner-Internet 101 Computing MGH, 1996

CSE-204-F   **PROGRAMMING LANGUAGES**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                              Total Marks: 150
                                                              Duration of Exam: 3 Hrs.

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: Introduction:

Syntactic and semantic rules of a Programming language, Characteristics of a good programming language, Programming language translators compiler & interpreters Elementary data types – data objects, variable & constants, data types, Specification implementation of elementary data types, Declarations ,type checking & type conversions ,Assignment & initialization, Numeric data types, enumerations, Booleans & characters.

Section B: Structured data objects, Subprograms and Programmer Defined Data Type:

Structured data objects & data types , specification & implementation of structured data types, Declaration & type checking of data structure ,vector & arrays, records Character strings, variable size data structures , Union, pointer & programmer defined data objects, sets,
files. Evolution of data type concept, abstraction, encapsulation & information hiding,
Subprograms, type definitions, abstract data types.

Section C: Sequence Control and Data Control:

Implicit & explicit sequence control, sequence control within expressions, sequence control within statement, Subprogram sequence control: simple call return, recursive subprograms, Exception & exception handlers, co routines, sequence control. Names & referencing environment, static & dynamic scope, block structure, Local data & local referencing environment, Shared data: dynamic & static scope. Parameter & parameter transmission schemes.

Section D: Storage Management, Programming languages:

Major run time elements requiring storage, programmer and system controlled storage management & phases, Static storage management, Stack based storage management, Heap storage management, variable & fixed size elements. Introduction to procedural, nonprocedural, structured, functional and object oriented programming language, Comparison of C & C++ programming languages.

TEXT BOOK:
Programming languages Design & implementation by T.W. .Pratt, 1996, Prentice Hall Pub.
Programming Languages – Principles and Paradigms by Allen Tucker & Robert Noonan, 2002, TMH,

REFERENCE BOOKS:
Fundamentals of Programming languages by Ellis Horowitz, 1984, Galgotia publications (Springer Verlag),
Programming languages concepts by C. Ghezzi, 1989, Wiley Publications,
Programming Languages – Principles and Pradigms Allen Tucker, Robert Noonan 2002, T.M.H.

HUM-201-F   **ENGINEERING ECONOMICS**

L T P   Class Work marks : 50
3 1 0   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, Oligoply, Monoplistic Competition (Main features of these markets)

Section-D

Supply and Law of Supply, Role of Demand & Supply in Price Determinition 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 :

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

REFERENCE BOOKS:

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

CSIT-201-F   **ANALOG ELECTRONICS**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                   Total Marks: 150
                                                   Duration of Exam: 3 Hrs.

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: Introduction

Semiconductor Diodes and Rectifiers: Introduction, general characteristics, energy levels, extrinsic materials n & p type, ideal diode, basic construction and characteristics, DC & AC resistance, equivalent circuits, drift & diffusion currents, transition & diffusion capacitance, reverse recovery times, temperature effects, diode specifications, different types of diodes (Zener, Varactor, Schottky, Power, Tunnel, Photodiode & LED). Half wave & full wave rectifiers.

Section B: Transistor and Small Signal Amplifiers

Bipolar junction transistor: Introduction, Transistor, construction, transistor operations, BJT characteristics, load line, operating point, leakage currents, saturation and cut off mode of operations Eber-moll's model.
Bias stabilization: Need for stabilization, fixed Bias, emitter bias, self bias, bias stability with respect to variations in I_{co}, V_{BE} & β, Stabilization factors, thermal stability.
Small signal amplifiers: CB, CE, CC configurations, hybrid model for transistor at low frequencies, RC coupled amplifiers, mid band model, gain & impedance, comparisons of different configurations, Darlington pair, Hybrid π-model at high frequencies, Cascaded amplifiers.

Section C: Multistage & Multistage Amplifiers

Multistage Amplifiers: Cascaded amplifiers, Calculation of gain Impedance and bandwidth, Design of multistage amplifiers.
Multistage Amplifiers: Feedback concept, Classification of Feedback amplifiers, Properties of negative Feedback amplifiers, Impedance considerations in different Configurations, Examples of analysis of feedback Amplifiers

Section D: Field Effect Transistor

Field Effect Transistor: Introduction, Classification, FET characteristics, Operating point, Biasing, enhancement & Depletion type MOSFETS.
Introduction to UJT SCR, Thyristor- Firing characteristics

TEXT BOOKS

1. J. Millman and Halkias, "Electronic devices and circuits" TMH, 1999.
2. Salivahanan, Suresh Kumar, Vallavaraj, "Electronic devices and circuits" TMH, 1999

REFERENCE BOOK

1. J. Millman and Halkias, "Integrated Electronics, Analog & Digital Circuits & Systems" TMH – 2000.
2. Boylestad & Nashelsky, "Electronic Devices & Circuit Theory" PHI – VIth Edition.
3. Sedra & Smith, "Micro Electronic Circuits" Oxford University Press, 2000
4. J.B.Gupta, "Electronic Devices & Circuits" S. K. Kataria, IInd Edition.

CSE-210-F   **COMPUTER ARCHITECTURE & ORGANIZATION**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                         Total Marks: 150
                                                         Duration of Exam: 3 Hrs.

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

Boolean algebra and Logic gates, Combinational logic blocks(Adders, Multiplexers, Encoders, de-coder), Sequential logic blocks(Latches, Flip-Flops, Registers, Counters) Store program control concept, Flynn's classification of computers (SISD, MISD, MIMD); Multilevel viewpoint of a machine: digital logic, micro architecture, ISA, operating systems, high level language; structured organization; CPU, caches, main memory, secondary memory units & I/O; Performance metrics; MIPS, MFLOPS.

Section B: Instruction Set Architecture

Instruction set based classification of processors (RISC, CISC, and their comparison); addressing modes: register, immediate, direct, indirect, indexed; Operations in the instruction set; Arithmetic and Logical, Data Transfer, Control Flow; Instruction set formats (fixed, variable, hybrid); Language of the machine: 8086 ; simulation using MSAM.

Section C: Basic non pipelined CPU Architecture and Memory Hierarchy & I/O Techniques

CPU Architecture types (accumulator, register, stack, memory/ register) detailed data path of a typical register based CPU, Fetch-Decode-Execute cycle (typically 3 to 5 stage); microinstruction sequencing, implementation of control unit, Enhancing performance with pipelining. The need for a memory hierarchy (Locality of reference principle, Memory hierarchy in practice: Cache, main memory and secondary memory, Memory parameters: access/ cycle time, cost per bit); Main memory (Semiconductor RAM & ROM organization, memory expansion, Static & dynamic memory types); Cache memory (Associative & direct mapped cache organizations.

Section D: Introduction to Parallelism and Computer Organization [80x86]

Goals of parallelism (Exploitation of concurrency, throughput enhancement); Amdahl's law; Instruction level parallelism (pipelining, super scaling –basic features); Processor level parallelism (Multiprocessor systems overview).

Instruction codes, computer register, computer instructions, timing and control, instruction cycle, type of instructions, memory reference, register reference. I/O reference, Basics of Logic Design, accumulator logic, Control memory, address sequencing, micro-instruction formats, micro-program sequencer, Stack Organization, Instruction Formats, Types of interrupts; Memory Hierarchy.

TEXT BOOKS:

1. Computer Organization and Design, 2nd Ed., by David A. Patterson and John L. Hennessy, Morgan 1997, Kauffmann.
2. Computer Architecture and Organization, 3rd Edi, by John P. Hayes, 1998, TMH.

REFERENCE BOOKS:

1. Operating Systems Internals and Design Principles by William Stallings,4th edition, 2001, Prentice-Hall Upper Saddle River, New Jersey
2. Computer Organization, 5th Edi, by Carl Hamacher, Zvonko Vranesic,2002, Safwat Zaky.
3. Structured Computer Organisation by A.S. Tanenbaum, 4th edition, Prentice-Hall of India, 1999, Eastern Economic Edition.
4. Computer Organisation & Architecture: Designing for performance by W. Stallings, 4th edition, 1996, Prentice-Hall International edition.
5. Computer System Architecture by M. Mano, 2001, Prentice-Hall.
6. Computer Architecture- Nicholas Carter, 2002, T.M.H.

IT-204-F   **MULTIMEDIA TECHNOLOGIES**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                  Total Marks: 150
                                                  Duration of Exam: 3 Hrs.

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

Basics of Multimedia Technology: Computers, communication and entertainment; multimedia an introduction; framework for multimedia systems; multimedia devices; CD-Audio, CD-ROM, CD-I, presentation devices and the user interface; multimedia presentation and authoring; professional development tools; LANs and multimedia; internet, World Wide Web & multimedia distribution network-ATM & ADSL; multimedia servers & databases; vector graphics; 3D graphics programs; animation techniques; shading; anti aliasing; morphing; video on demand.

Section-B

Image Compression & Standards: Making still images; editing and capturing images; scanning images; computer color models; color palettes; vector drawing; 3D drawing and rendering; JPEG-objectives and architecture; JPEG-DCT encoding and quantization, JPEG statistical coding, JPEG predictive lossless coding; JPEG performance; overview of other image file formats as GIF, TIFF, BMP, PNG etc.

Section-C

Audio & Video: Digital representation of sound; time domain sampled representation; method of encoding the analog signals; subband coding; fourier method; transmission of digital sound; digital audio signal processing; stereophonic & quadraphonic signal processing; editing sampled sound; MPEG Audio; audio compression & decompression; brief survey of speech recognition and generation; audio synthesis; musical instrument digital interface; digital video and image compression; MPEG motion video compression standard; DVI technology; time base media representation and delivery.

Section-D

Virtual Reality: Applications of multimedia, intelligent multimedia system, desktop virtual reality, VR operating system, virtual environment displays and orientation making; visually

coupled system requirements; intelligent VR software systems. Applications of environment in various fields.

TEXT BOOKS:

1. An introduction, Villamil & Molina, Multimedia Mc Milan, 1997
2. Multimedia: Sound & Video, Lozano, 1997, PHI, (Que)

REFERENCE BOOKS:

1. Multimedia: Production, planning and delivery, Villamil & Molina,Que, 1997
2. Multimedia on the PC, Sinclair,BPB
3. Multimedia: Making it work, Tay Vaughan, fifth edition, 1994, TMH.
4. Multimedia in Action by James E Shuman, 1997, Wadsworth Publ.,
5. Multimedia in Practice by Jeff coate Judith, 1995,PHI.
6. Multimedia Systems by Koegel, AWL
7. Multimedia making it Work by Vaughar, etl.
8. Multimedia Systems by John .F. Koegel, 2001, Buford.
9. Multimedia Communications by Halsall & Fred, 2001,AW.

CSE- 212-F   DATABASE MANAGEMENT SYSTEMS LAB

L T P   Class Work Marks: 50
0 0 3   Exam Marks: 50
                                          Total Marks: 100
                                          Duration of exam: 3 hrs

I. Create a database and write the programs to carry out the following operation:

   Add a record in the database
   Delete a record in the database
   Modify the record in the database
   Generate queries
   Generate the report
   List all the records of database in ascending order.

II Develop two menu driven projects for management of database system:

   1. Library information system
   a. Engineering
   b. MCA
   2. Inventory control system
   a. Computer Lab
   b. College Store
   3. Student information system
   c. Academic
   d. Finance
   4. Time table development system
   e. CSE, IT & MCA Departments
   f. Electrical & Mechanical Departments

Usage of S/w:

   1. VB, ORACLE and/or DB2
   2. VB, MSACCESS
   3. ORACLE, D2K
   4. VB, MS SQL SERVER 2000

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

IT-208-F   **MULTIMEDIA TECHNOLOGIES LAB.**

L T P	Class Work Marks: 25
0 0 2	Exam Marks: 25
	Total Marks: 50
	Duration of exam: 3 hrs.

1. Write a program to justify a text entered by the user on both the left and right hand side. For example, the test "An architect may have a graphics program to draw an entire building but be interested in only ground floor" can be justified in 30 columns as shown below. An architect may have a Graphics programs draw an Entric building but be interested in only ground floor.

2. Study the notes of a piano and stimulate them using the key board and store them in a file.

3. Write a program to read a paragraph and store it to a file name suggested by the author.

4. Devise a routine to produce the animation effect of a square transforming to a triangle and then to a circle.

5. Write a program to show a bitmap image on your computer screen.

6. Create a web page for a clothing company which contains all the details of that company and at-least five links to other web pages.

7. Write a program by which we can split mpeg video into smaller pieces for the purpose of sending it over the web or by small capacity floppy diskettes and then joining them at the destination.

8. Write a program to simulate the game of pool table.

9. Write a program to simulate the game Mine Sweeper.

10. Write a program to play "wave" or "midi" format sound files.

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

CSE-214-F   **INTERNET LAB.**

L T P		Class Work Marks:	25
0 0 2		Exam Marks:	25
		Total Marks:	50
		Duration of exam:	3 hrs

Exercises involving:

Sending and receiving mails.

Chatting on the net.

Using FTP and Tel net server.

Using HTML Tags (table, form, image, anchor etc.).

Making a Web page of your college using HTML tags.

Note: At least 10 exercise to be given by the teacher concerned.

GP-202-F **GENERAL FITNESS FOR THE PROFESSION**

L T P   Class Work: 50 Marks
0 0 2

- Quiz & Aptitude
- Comprehension,
- Communication for specifics.
- Lets Speek
- Composition skills- Formal letter writing based on the trends in practice in corporate culture.
- Training on etiquettes & manners should be carried further and be observed during the general classes, if required even the faculty should imparted some training on the same.

GP-302-F   **GENERAL FITNESS FOR THE PROFESSION**

L T P   Class Work: 50 Marks
0 0 2

- Quiz & Aptitude
- Comprehension,
- Communication for specifics.
- Lets Speek
- Composition skills- Formal letter writing based on the trends in practice in corporate culture.
- Training on etiquettes & manners should be carried further and be observed during the general classes, if required even the faculty should imparted some training on the same.

CSE-301-F   **PRINCIPLES OF OPERATING SYSTEMS**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                       Total Marks: 150
                                       Duration of Exam: 3 Hrs.

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

.
Introduction to Operating System Concepts (including Multitasking, multiprogramming, multi user, Multithreading etc)., Types of Operating Systems: Batch operating system, Time-sharing systems, Distributed OS, Network OS, Real Time OS; Various Operating system services, architecture, System programs and calls.

Process Management: Process concept, process scheduling, operation on processes; CPU scheduling, scheduling criteria, scheduling algorithms -First Come First Serve (FCFS), Shortest-Job- First (SJF), Priority Scheduling, Round Robin(RR), Multilevel Queue Scheduling.

Section-B

Memory Management: Logical & Physical Address Space, swapping, contiguous memory allocation, non-contiguous memory allocation paging and segmentation techniques, segmentation with paging; virtual memory management - Demand Paging & Page-Replacement Algorithms; Demand Segmentation.

Section-C

File System: Different types of files and their access methods, directory structures, various allocation methods, disk scheduling and management and its associated algorithms, Introduction to distributed file system.

Process-Synchronization & Deadlocks: Critical Section Problems, semaphores; methods for handling deadlocks-deadlock prevention, avoidance & detection; deadlock recovery.

Section-D

I/O Systems: I/O Hardware, Application I/O Interface, Kernel, Transforming I/O requests, Performance Issues.

Unix System and Windows NT Overview Unix system call for processes and file system management, Shell interpreter, Windows NT architecture overview, Windows NT file system.

TEXT BOOKS:

1. Operating System Concepts by Silberchatz et al, 5th edition, 1998, Addison-Wesley.
2. Modern Operating Systems by A. Tanenbaum, 1992, Prentice-Hall.
3. Operating Systems Internals and Design Principles by William Stallings,4th edition, 2001, Prentice-Hall

REFERENCE BOOKS:

1. Operating System By Peterson , 1985, AW.
2. Operating System By Milankovic, 1990, TMH.
3. Operating System Incorporating With Unix & Windows By Colin Ritche, 1974, TMH.
4. Operating Systems by Mandrik & Donovan, TMH
5. Operating Systems By Deitel, 1990, AWL.
6. Operating Systems – Advanced Concepts By Mukesh Singhal , N.G. Shivaratri, 2003.

EE-309-F   **MICROPROCESSORS AND INTERFACING**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                               Total Marks: 150
                                               Duration of Exam: 3 Hrs.

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

THE 8085 PROCESSOR: Introduction to microprocessor, 8085 microprocessor: Architecture, instruction set, interrupts structure, and assembly language programming.

THE 8086 MICROPROCESSOR ARCHITECTURE: Architecture, block diagram of 8086, details of sub-blocks such as EU, BIU; memory segmentation and physical address computations, program relocation, addressing modes, instruction formats, pin diagram and description of various signals.

Section-B

INSTRUCTION SET OF 8086: Instruction execution timing, assembler instruction format, data transfer instructions, arithmetic instructions, branch instructions, looping instructions, NOP and HLT instructions, flag manipulation instructions, logical instructions, shift and rotate instructions, directives and operators, programming examples.

Section-C

INTERFACING DEVICE: The 8255 PPI chip: Architecture, control words, modes and examples.
DMA: Introduction to DMA process, 8237 DMA controller.

Section-D

INTERRUPT AND TIMER: 8259 Programmable interrupt controller, Programmable interval timer chips.

TEXT BOOKS:

1. Microprocessor Architecture, Programming & Applications with 8085: Ramesh S Gaonkar; Wiley Eastern Ltd.
2. The Intel Microprocessors 8086- Pentium processor: Brey; PHI

REFERENCE BOOKS:

1. Microprocessors and interfacing: Hall; TMH
2. The 8088 & 8086 Microprocessors-Programming, interfacing,Hardware & Applications :Triebel & Singh; PHI
3. Microcomputer systems: the 8086/8088 Family: architecture, Programming & Design: Yu-Chang Liu & Glenn A Gibson; PHI.
4. Advanced Microprocessors and Interfacing: Badri Ram; TMH

CSE -303-F **COMPUTER GRAPHICS**

L T P Class Work Marks: 50
3 1 0 Exam Marks: 100
  Total Marks: 150
  Duration of Exam: 3 Hrs.

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

Introduction to Computer Graphics: What is Computer Graphics, Computer Graphics Applications, Computer Graphics Hardware and software, Two dimensional Graphics Primitives: Points and Lines, Line drawing algorithms: DDA, Bresenham's; Circle drawing algorithms: Using polar coordinates, Bresenham's circle drawing, mid point circle drawing algorithm; Filled area algorithms: Scanline: Polygon filling algorithm, boundary filled algorithm.

Section-B

Two/Three Dimensional Viewing: The 2-D viewing pipeline, windows, viewports, window to view port mapping; Clipping: point, clipping line (algorithms):- 4 bit code algorithm, Sutherland cohen algorithm, parametric line clipping algorithm (Cyrus Beck).
Polygon clipping algorithm: Sutherland-Hodgeman polygon clipping algorithm. Two dimensional transformations: transformations, translation, scaling, rotation, reflection, composite transformation. Three dimensional transformations: Three dimensional graphics concept, Matrix representation of 3-D Transformations, Composition of 3-D transformation.

Section-C

Viewing in 3D: Projections, types of projections, the mathematics of planner geometric projections, coordinate systems.

Hidden surface removal: Introduction to hidden surface removal. The Z- buffer algorithm, scanline algorithm, area sub-division algorithm.

Representing Curves and Surfaces: Parametric representation of curves: Bezier curves, B-Spline curves. Parametric representation of surfaces; Interpolation method.

Section-D

Illumination, shading, image manipulation: Illumination models, shading models for polygons, shadows, transparency. What is an image? Filtering, image processing, geometric transformation of images.

TEXT BOOKS:

1. Computer Graphics Principles and Practices second edition by James D. Foley, Andeies van Dam, Stevan K. Feiner and Johb F. Hughes, 2000, Addision Wesley.
2. Computer Graphics by Donald Hearn and M.Pauline Baker, 2nd Edition, 1999, PHI

REFERENCE BOOKS:

1. Procedural Elements for Computer Graphics – David F. Rogers, 2001, T.M.H Second Edition
2. Fundamentals of 3Dimensional Computer Graphics by Alan Watt, 1999, Addision Wesley.
3. Computer Graphics: Secrets and Solutions by Corrign John, BPB
4. Graphics, GUI, Games & Multimedia Projects in C by Pilania & Mahendra, Standard Publ.
5. Computer Graphics Secrets and solutions by Corrign John, 1994, BPV
6. Introduction to Computer Graphics By N. Krishanmurthy T.M.H 2002

CSE-404-F **ADVANCED JAVA**

L T P
3 1 0

Class Work Marks: 50
Exam Marks: 100
Total Marks: 150
Duration of Exam: 3 Hrs.

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

Introduction to Java, Data types, variables, operators, Arrays, Control Statements, Classes & Methods, Inheritance, Exception Handling, Multithreading, Collections, I/O streams, AWT & Applet Programming.
Connecting to a Server, Implementing Servers, Sending E-Mail, Making URL Connections, Advanced Socket Programming

Section-B

The Design of JDBC. The Structured Query Language, JDBC Installation, Basic JDBC Programming Concepts, Query Execution, Scrollable and Updatable Result Sets, Matadata, Row Sets, Transactions, Advanced Connection Management, Introduction of LDAP
The Roles of Client and Server, Remote Method Invocations, Setup for Remote Method Invocation, Parameter Passing in Remote Methods Server Object Activation, Java IDL and CCRA, Remote Method Calls with SOAP

Section-C

SWING: Lists, Trees, Tables, Styled Text Components, Progress Indicators, Component Organizers
AWT :The Rendering Pipeline, Shapes, Areas, Strokes, Paint, Coordinate Transformations, Clipping, Transparency and Composition, Rendering Hints, Readers and Writers for Images, Image Manipulation, Printing. The Clipboard, Drag and Drop

Section-D

JAVABEANS COMPONENTS: Beans, the Bean-Writing Process, Using Beans to Build an Application, Naming Patterns for Bean Components and Events Bean Property Tubes Bean info Classes Property Editors Cuatomizes.
SECURITY: Class Loaders, Bytecode Verification, Security Managers and Permissions, Digital Signatures, Code Signing, Encryption

TEXT BOOK:
1. Core Java TM 2, Volume II-Advanced Features, 7th Edition by Cay Horetmann, Gary Cornelll Pearson Publisher, 2004
REFERENCE BOOKS:
1. Professional Java Programming by Brett Spell, WROX Publication
2. Advanced Java 2 Platform, How to Program, 2nd Edition, Harvey. M. Dietal, Prentice Hall

HUM-453-F   **HUMAN RESOURCE MANAGEMENT**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                              Total Marks: 150
                                              Duration of Exam: 3 Hrs.

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

Understanding Organizational Behavior: Definition, Goals of Organizational behavior. Key forces affecting Organizational Behavior. Fundamental Concepts of Organizational Behavior.
Motivation : Meaning, Objectives and importance of motivation. Theories of Motivation, Maslow's theory, Mc Greger's Theory Herzberg's theory.
Morale : Meaning; Factors affecting morale, types of morale and productivity, Evaluation of morale, improving morale.

Section B

Communication: Definition & importance, Nature of leadership various approaches to leadership styles.
Leadership: Definition & importance, Nature of leadership various approaches to leadership styles.

Section C

Importance of human resources in industry, Definition of human resource management, mechanical approach towards personnel, Paternalism, Social system approach.
Need for human resource planning, process of human resource planning, Methods of recruitment, Psychological tests and interviewing meaning and importance of placement Meaning and techniques of induction. Training and development : Concepts of training and development, importance of training and development, Management development its nature, purpose and method.

Section D

Significant factors affecting compensation, Methods of wage payment, Wage differentials, Causes of difference in Wages, Types of wage differentials, Wage incentives, Meaning, Objectives, types of incentive plans.

Text Books:

1. Human Resource and Personnel Management-K. Aswathappa-Tata McGraw Hill Publishing Company Ltd.
2. Personnel Management : C.B. Mamoria, Himalaya Publishing House.
3. Organisational Behavior-Dr. L.M. Prasad (Sultan Chand & Sons).

Reference Books:

1. Personnel Management & Industrial Relations : Dr. T.N.Bhagoliwal Sahitya Bhawan Agra.
2. Personnel Management : V.G. Karnik, Jaico Publishing House.
3. Personnel management & Industrial Relation : Tripathi : Sultan Chand & Sons.
4. Personnel Management-Arun Monappa & Mirza Saiyadain- Tata McGraw Hill Publishing Co. Ltd.
5. Personnel Management and Industrial Relations-D.C. Sharma & R.C. Sharma S.J. Publications.
6. Principles of Personnel Management-Edwin B. Flippo (McGraw Hill).
7. Organizational Behavior-K. Adwathappa.
8. Organizational Behavior-John W. Newsstorn & Keith Davis, Tata McGraw Hill Publishing Company Limited, New Delhi.

EE-217-F   **DIGITAL AND ANALOG COMMUNICATION**
(CSE, IT)

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                Total Marks: 150
                                                Duration of Exam: 3 Hrs.

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, and 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:

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

REFERENCE BOOKS:

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

EE-329-F   **MICROPROCESSORS AND INTERFACING LAB**

L T P   Class Work Marks: 25
0 0 2   Exam Marks: 25
                                                      Total Marks: 50
                                                      Duration of exam: 3 hrs

LIST OF EXPERIMENTS:

1. Study of 8085 Microprocessor kit.
2. Write a program using 8085 and verify for:
    a. Addition of two 8-bit numbers.
    b. Addition of two 8-bit numbers (with carry).
3. Write a program using 8085 and verify for:
    a. 8-bit subtraction (display borrow)
    b. 6-bit subtraction (display borrow)
4. Write a program using 8085 for multiplication of two 8- bit numbers by repeated addition Method. Check for minimum number of additions and test for typical data.
5. Write a program using 8085 for multiplication of two 8- bit numbers by bit rotation method and verify.
6. Write a program using 8085 for division of two 8- bit numbers by repeated subtraction Method and test for typical data.
7. Write a program using 8085 for dividing two 8- bit numbers by bit rotation method and test for typical data.
8. Study of 8086 microprocessor kit
9. Write a program using 8086 for division of a defined double word (stored in a data segment) by another double Word division and verify.
10. Write a program using 8086 for finding the square root of a given number and verify.
11. Write a program using 8086 for copying 12 bytes of data from source to destination and verify.
12. Write a program using 8086 and verify for:
    a. Finding the largest number from an array.
    b. Finding the smallest number from an array.
13. Write a program using 8086 for arranging an array of numbers in descending order and verify.
14. Write a program using 8086 for arranging an array of numbers in ascending order and verify.
15. Write a program for finding square of a number using look-up table and verify.   .
16. Write a program to interface a two digit number using seven-segment LEDs. Use 8085/8086 microprocessor and 8255 PPI.
17. Write a program to control the operation of stepper motor using 8085/8086 microprocessor and 8255 PPI.

NOTE: At least ten experiments have to be performed in the semester out of which seven experiments should be performed from above list. Remaining three experiments may either be performed from the above list or designed & set by the concerned institution as per the scope of the syllabus of EE-309-F.

CSE-309-F   **COMPUTER GRAPHICS LAB.**

L T P   Class Work Marks: 50
0 0 2   Exam Marks: 50
                                        Total Marks: 100
                                        Duration of exam: 3 hrs.

List of programs to be developed:-

1.   Write a program for 2D line drawing as Raster Graphics Display.

2.   Write a program for circle drawing as Raster Graphics Display.

3.   Write a program for polygon filling as Raster Graphics Display

4.   Write a program for line clipping.

5.   Write a program for polygon clipping.

6.   Write a program for displaying 3D objects as 2D display using perspective
        transformation.

7.   Write a program for rotation of a 3D object about arbitrary axis.

8.   Write a program for Hidden surface removal from a 3D object.

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

CSE-406-F   **ADVANCED JAVA LAB.**

L T P   Class Work Marks: 50
0 0 2   Exam Marks: 50
                                                    Total Marks: 100
                                                    Duration of exam: 3 hrs

Development of programs relating to:
   1. JDBC
   2. Servlets
   3. Beans
   4. RMI
   5. JSP

Note   : At least 10 programs are required to be developed in the semester.

CSE-302-F **PRINCIPLES OF SOFTWARE ENGINEERING**

L T P
3 1 0

Class Work Marks: 50
Exam Marks: 100
Total Marks: 150
Duration of Exam: 3 Hrs.

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

Introduction: The process, software products, emergence of software engineering, evolving role of software, software life cycle models, Software Characteristics, Applications, Software crisis.
Software project management: Project management concepts, software process and project metrics Project planning, project size estimation metrics, project estimation Techniques, empirical estimation techniques, COCOMO- A Heuristic estimation techniques, staffing level estimation, team structures, staffing, risk analysis and management, project scheduling and tracking.
Requirements Analysis and specification requirements engineering, system modeling and simulation Analysis principles modeling, partitioning Software, prototyping: , Prototyping methods and tools; Specification principles, Representation, the software requirements specification and reviews Analysis Modeling: Data Modeling, Functional modeling and information flow: Data flow diagrams, Behavioral Modeling; The mechanics of structured analysis: Creating entity/ relationship diagram, data flow model, control flow model, the control and process specification; The data dictionary; Other classical analysis methods.

Section-B

System Design: Design concepts and principles: the design process: Design and software quality, design principles; Design concepts: Abstraction, refinement, modularity, software architecture, control hierarchy, structural partitioning, data structure, software procedure, information hiding; Effective modular design: Functional independence, Cohesion, Coupling; Design Heuristics for effective modularity; the design model; Design documentation.
Architectural Design: Software architecture, Data Design: Data modeling, data structures, databases and the data warehouse, Analyzing alternative Architectural Designs, architectural complexity; Mapping requirements Into software architecture; Transform flow, Transaction flow; Transform mapping: Refining the architectural design.

Section-C

Testing and maintenance: Software Testing Techniques, software testing fundamentals: objectives, principles, testability; Test case design, white box testing, basis path testing:

Control structure testing: Black box testing, testing for specialized environments, architectures and applications. Software Testing Strategies: Verification and validation, Unit testing, Integration testing,; Validation testing, alpha and beta testing; System testing: Recovery testing, security testing, stress testing, performance testing; The art of debugging, the debugging process debugging approaches. Software re-engineering, reverse engineering, restructuring, forward engineering

Section-D

Software Reliability and Quality Assurance :Quality concepts, Software quality assurance , SQA activities; Software reviews: cost impact of software defects, defect amplification and removal; formal technical reviews: The review meeting, review reporting and record keeping, review guidelines; Formal approaches to SQA; Statistical software quality assurance; software reliability: Measures of reliability and availability ,The ISO 9000 Quality standards: The ISO approach to quality assurance systems, The ISO 9001 standard, Software Configuration Management.

Computer aided software Engineering: CASE, building blocks, integrated case environments and architecture, repository.

TEXT BOOK:
  1. Software Engineering – A Practitioner's Approach, Roger S. Pressman, 1996, MGH.

REFERENCE BOOKS:
  1. Fundamentals of software Engineering, Rajib Mall, PHI
  2. Software Engineering by Ian Summerville, Pearson Edu, 5th edition, 1999, AW,
  3. Software Engineering – David Gustafson, 2002, T.M.H
  4. Software Engineering Fundamentals Oxford University, Ali Behforooz and Frederick J. Hudson 1995 JW&S,
  5. An Integrated Approach to software engineering by Pankaj jalote , 1991 Narosa,

CSE-304-F　　　　　　　　**INTELLIGENT SYSTEMS**

L T P

3 1 0

Class Work Marks: 50

Exam Marks: 100

Total Marks: 150

Duration of Exam: 3 Hrs.

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

Foundational issues in intelligent systems: Foundation and history of AI, Ai problems and techniques – AI programming languages, introduction to LISP and PROLOG- problem spaces and searches, blind search strategies, Breadth first- Depth first- heuristic search techniques Hill climbing: best first- A * algorithm AO* algorithm- game tree, Min max algorithms, game playing- alpha beta pruning.

Section-B

Knowledge representation issues, predicate logic- logic programming, semantic nets- frames and inheritance, constraint propagation, representing knowledge using rules, rules based deduction systems.

Section-C

Reasoning under uncertainty, review of probability, Baye's probabilistic interferences and Dempster shafer theory, Heuristic methods, symbolic reasoning under uncertainty, Statistical reasoning, Fuzzy reasoning, Temporal reasoning, Non monotonic reasoning.

Section-D

Planning, planning in situational calculus, representation for planning, partial order planning algorithm, learning from examples, discovery as learning, I earning by analogy, explanation based learning, neural nets, genetic algorithms.

Principles of Natural language processing, rule based systems architecture, Expert systems, knowledge acquisition concepts, AI application to robotics, and current trends in intelligent systems.

TEXT BOOK:
1. Artificial Intelligence: A Modern Approach,. Russell & Norvig. 1995, Prentice Hall.

REFERENCE BOOKS:
1. Artificial Intelligence, Elain Rich and Kevin Knight, 1991, TMH.
2. Artificial Intelligence-A modern approach, Staurt Russel and peter norvig, 1998, PHI.
3. Artificial intelligence, Patrick Henry Winston:, 1992, Addition Wesley 3rd Ed.,

IT-305-F   **COMPUTER NETWORKS**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                         Total Marks: 150
                                         Duration of Exam: 3 Hrs.

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

OSI Reference Model and Network Architecture: Introduction to Computer Networks, Example networks ARPANET, Internet, Private Networks, Network Topologies: Bus-, Star-, Ring-, Hybrid -, Tree -, Complete -, Irregular –Topology; Types of Networks : Local Area Networks, Metropolitan Area Networks, Wide Area Networks; Layering architecture of networks, OSI model, Functions of each layer, Services and Protocols of each layer

Section-B

TCP/IP: Introduction, History of TCP/IP, Layers of TCP/IP, Protocols, Internet Protocol, Transmission Control Protocol , User Datagram Protocol, IP Addressing, IP address classes, Subnet Addressing, Internet Control Protocols, ARP, RARP, ICMP, Application Layer, Domain Name System, Email – SMTP, POP,IMAP; FTP, NNTP, HTTP, Overview of IP version 6.

Section-C

Local Area Networks: Introduction to LANs, Features of LANs, Components of LANs, Usage of LANs, LAN Standards, IEEE 802 standards, Channel Access Methods, Aloha, CSMA, CSMA/CD, Token Passing, Ethernet, Layer 2 & 3 switching, Fast Ethernet and Gigabit Ethernet, Token Ring, LAN interconnecting devices: Hubs, Switches, Bridges, Routers, Gateways.

Wide Area Networks: Introduction of WANs, Routing, Congestion Control, WAN Technologies, Distributed Queue Dual Bus (DQDB), Synchronous Digital Hierarchy (SDH)/ Synchronous Optical Network (SONET), Asynchronous Transfer Mode (ATM), Frame Relay.,Wireless Links.

Section-D

Introduction to Network Management: Remote Monitoring Techniques: Polling, Traps, Performance Management, Class of Service, Quality of Service, Security management,

Firewalls, VLANs, Proxy Servers, Introduction to Network Operating Systems: Client-Server infrastructure, Windows NT/2000.

TEXT BOOKS:
1. Computer Networks (3rd edition), Tanenbaum Andrew S., International edition, 1996.

REFERENCE BOOKS:
1. Data Communications, Computer Networks and Open Systems (4th edition), Halsall Fred, 2000, Addison Wesley, Low Price Edition.
2. Business Data Communications, Fitzgerald Jerry.
3. Computer Networks – A System Approach, Larry L. Peterson & Bruce S. Davie, 2nd Edition
4. Computer Networking – ED Tittel , 2002, T.M.H.

IT-303-F   SYSTEMS PROGRAMMING &SYSTEM ADMINISTRATION

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                  Total Marks: 150
                                                  Duration of Exam: 3 Hrs.

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

Evolution of Components Systems Programming, Assemblers, Loaders, Linkers, Macros, Compilers. Software tools, Text editors, Interpreters and program generators, Debug Monitors, Programming environment.

Compiler: Brief overview of compilation process, Incremental compiler, Assembler: Problem statement, single phase and two phase assembler, symbol table; Loader schemes, compile and go Loader, general loader schemes, absolute loader, Subroutine linkage, Reallocating loader, Direct linkage Loader, Binders, Linking loader, overlays.

Section-B

Macro language and macro-processor, macro instructions, features of macro facility, macro instruction arguments, conditional macro expansion, macro calls with macro instruction defining macros.

Theoretical Concept of UNIX Operating System: Basic features of operating system; File structure: CPU scheduling; Memory management: swapping, demand paging; file system: block and fragments, inodes, directory structure; User to user communication.

Section-C

Getting Started with Unix: User names and groups, logging in; Format of Unix commands; Changing your password; Characters with special meaning; Unix documentation; Files and directories; Current directory, looking at the directory contents, absolute and relative pathnames, some Unix directories and files; Looking at the file contents; File permissions; basic operation on files; changing permission modes; Standard files, standard output; Standard input, standard error; filters and pipelines; Processes; finding out about processes; Stopping background process; Unix editor vi.

Test Manipulation: Inspecting files; File statistics; Searching for patterns; Comparing files; Operating on files; Printing files; Rearranging files; Sorting files; Splitting files; Translating characters; AWK utility.

Section-D

Shell Programming: Programming in the Borne and C-Shell; Wild cards; Simple shell programs; Shell variables; Shell programming constructs; interactive shell scripts; Advanced features.

System Administration: Definition of system administration; Booting the system; Maintaining user accounts; File systems and special files; Backups and restoration; Role and functions of a system manager. Overview of the linux operating system

TEXT BOOKS:
1. Systems Programming by Donovan, TMH.
2. The UNIX programming environment by Brain Kernighen & Rob Pike, 1984, PHI & Rob Pike.
3. Design of the UNIX operating system by Maurich Bach, 1986, PHI.
4. Introduction to UNIX and LINUX by John Muster, 2003, TMH.

REFERENCE BOOK:
1. Advanced Unix programmer's Guide by Stephen Prato, BPB
2. Unix- Concept and applications by Sumitabha Das, 2002, T.M.H

CSE-206-F   **THEORY OF AUTOMATA COMPUTATION**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                         Total Marks: 150
                                                         Duration of Exam: 3 Hrs.

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

Finite Automata and Regular Expressions: Finite State Systems, Basic Definitions Non-Deterministic finite automata (NDFA), Deterministic finite automata (DFA), Equivalence of DFA and NDFA Finite automata with E-moves, Regular Expressions, Equivalence of finite automata and Regular Expressions, Regular expression conversion and vice versa.
Introduction to Machines: Concept of basic Machine, Properties and limitations of FSM. Moore and mealy Machines, Equivalence of Moore and Mealy machines, Conversion of NFA to DFA by Arden's Method.

Section-B

Properties of Regular Sets: The Pumping Lemma for Regular Sets, Applications of the pumping lemma, Closure properties of regular sets, Myhill-Nerode Theorem and minimization of finite Automata, Minimization Algorithm.
Grammars: Definition, Context free and Context sensitive grammar, Ambiguity regular grammar, Reduced forms, Removal of useless Symbols and unit production, Chomsky Normal Form (CNF), Griebach Normal Form (GNF).

Section-C

Pushdown Automata: Introduction to Pushdown Machines, Application of Pushdown Machines
Turing Machines: Deterministic and Non-Deterministic Turing Machines, Design of T.M, Halting problem of T.M., PCP Problem.

Section-D

Chomsky Hierarchies: Chomsky hierarchies of grammars, Unrestricted grammars, Context sensitive languages, Relation between languages of classes.
Computability: Basic concepts, Primitive Recursive Functions.

TEXT BOOK:

1. Introduction to automata theory, language & computations- Hopcroaft & O.D.Ullman, R. Mothwani, 2001, AW

REFERENCE BOOKS:

1. Theory of Computer Sc. (Automata, Languages and computation):K.L.P.Mishra & N.Chandrasekaran, 2000, PHI.
2. Introduction to formal Languages & Automata-Peter Linz, 2001, Narosa Publ..
3. Fundamentals of the Theory of Computation- Principles and Practice by RamondGreenlaw and H. James Hoover, 1998, Harcourt India Pvt. Ltd..
4. Elements of theory of Computation by H.R. Lewis & C.H. Papaditriou, 1998, PHI.
5. Introduction to languages and the Theory of Computation by John C. Martin 2003, T.M.H.

EE-402-F   **WIRELESS COMMUNICATION**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                   Total Marks: 150
                                                   Duration of Exam: 3 Hrs.

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

INTRODUCTION TO WIRELESS COMMUNICATION SYSTEMS: Evolution of mobile radio communications, examples of wireless comm. systems, paging systems, Cordless telephone systems, comparison of various wireless systems.

MODERN WIRELESS COMMUNICATION SYSTEMS: Second generation cellular networks, third generation wireless networks, wireless in local loop, wireless local area networks, Blue tooth and Personal Area networks.

Section-B

INTRODUCTION TO CELLULAR MOBILE SYSTEMS: Spectrum Allocation, basic Cellular Systems, performance Criteria, Operation of cellular systems, analog cellular systems, digital Cellular Systems.

CELLULAR SYSTEM DESIGN FUNDAMENTALS: Frequency Reuse, channel assignment strategies, handoff Strategies, Interference and system capacity, tracking and grade off service, improving coverage and capacity.

Section-C

MULTIPLE ACCESS TECHNIQUES FOR WIRELESS COMMUNICATION: Introduction to Multiple Access, FDMA, TDMA, Spread Spectrum multiple Access, space division multiple access, packet ratio, capacity of a cellular systems.

WIRELESS NETWORKING: Difference between wireless and fixed telephone networks, development of wireless networks, fixed network transmission hierarchy, traffic routing in wireless networks, wireless data services, common channel signaling, ISDN (Integrated Services digital Networks), advanced intelligent networks.

Section-D

INTELLIGENT CELL CONCEPT AND APPLICATION: Intelligent cell concept, applications of intelligent micro-cell Systems, in-Building Communication, CDMA cellular Radio Networks.

TEXT BOOKS:
1. Wireless Communications: Theodore S. Rappaport; Pearsons.
2. Mobile Cellular Telecommunication: W.C.Y.Lee; McGraw Hill

REFERENCE BOOK:
1. Mobile Communications: Jochen Schiller; Pearson

CSE-306-F   **INTELLIGENT SYSTEM LAB**

L T P   Class Work Marks: 25
0 0 3   Exam Marks: 25
                                             Total Marks: 50
                                             Duration of exam: 3 hrs.

1.   Study of PROLOG.

Write the following programs using PROLOG.
2.   Write a program to solve 8 queens problem.
3.   Solve any problem using depth first search.
4.   Solve any problem using best first search.
5.   Solve 8-puzzle problem using best first search
6.   Solve Robot (traversal) problem using means End Analysis.
7.   Solve traveling salesman problem.

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

CSIT-302-F **UNIX LAB**

L T P   Class Work Marks: 50
0 0 3   Exam Marks: 50
                                               Total Marks: 100
                                               Duration of exam: 3 hrs

- Study of WINDOWS 2000 Operating System.
- Study of LINUX Operating System.
- Study of UNIX Operating System (Linux kernel, shell, basic commands pipe & filter commands).
- Administration of UNIX Operating System.
- Writing of Shell Scripts (Shell programming).
- AWK programming.

Note : At least 10 programs are required to be developed in the semester.

CSE-405-F   **COMPILER DESIGN**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                               Total Marks: 150
                                               Duration of Exam: 3 Hrs.

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

Introduction to Compilers: Compilers and translators need of translators, structure of compiler: its different phases, Compiler construction tools.
Lexical Analysis: Role of lexical analyzer, design of lexical analyzer, regular expressions, Specification and recognition of tokens, input buffering, A language specifying lexical analyzer. Finite automata, conversion from regular expression to finite automata, and vice versa, minimizing number of states of DFA, Implementation of lexical analyzer.

Section-B

Syntax Analysis: Role of parsers, context free grammars, definition of parsing.
Parsing Technique: Shift- reduce parsing, operator precedence parsing, top down par sing, predictive parsing.
LR parsers, SLR, LALR and Canonical LR parser.

Section-C

Syntax Directed Translations: Syntax directed definition, construction of syntax trees, syntax directed translation scheme, implementation of syntax directed translation, three address code, quadruples and triples.
Symbol Table & Error Detection and Recovery: Symbol tables, its contents and data structure for symbol tables; trees, arrays, linked lists, hash tables. Errors, lexical phase error, syntactic phase error, semantic error.

Section-D

Code Optimization & Code Generation: Code generation, forms of objects code, machine dependent code, optimization, register allocation for temporary and user defined variables.

TEXT BOOKS:
1. Compilers Principle, Techniques & Tools - Alfread V. AHO, Ravi Sethi & J.D. Ullman; - 1998 Addison Wesley.
2. Compiler Design by O.G. Kakde, 1995, Laxmi Publ.

REFERENCE BOOKS:
1. Theory and practice of compiler writing, Tremblay & Sorenson, 1985, Mc. Graw Hill.
2. System software by Dhamdare, 1986, MGH.
3. Principles of compiler Design, Narosa Publication

IT-401-F   **DATA WAREHOUSING AND DATA MINING**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                              Total Marks: 150
                                                              Duration of Exam: 3 Hrs.

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

Data warehousing Definition, usage and trends. DBMS vs data warehouse, Data marts, Metadata, Multidimensional data mode, Data cubes, Schemas for Multidimensional Database: stars, snowflakes and fact constellations.
Data warehouse process & architecture, OLTP vs OLAP, ROLAP vs MOLAP, types of OLAP, servers, 3-Tier data warehouse architecture, distributed and virtual data warehouses, data warehouse manager.

Section B

Data warehouse implementation, computation of data cubes, modelling OLAP data, OLAP queries manager, data warehouse back end tools, complex aggregation at multiple granularities, tuning and testing of data warehouse.

Section C

Data mining definition & task, KDD versus data mining, data mining techniques, tools and applications.
Data mining query languages, data specification, specifying knowledge, hierarchy specification, pattern presentation & visualisation specification, data mining languages and standardisation of data mining.

Section D
Data mining techniques: Association rules, Clustering techniques, Decision tree knowledge discovery through Neural Networks & Genetic Algorithm, Rough Sets, Support Victor Machines and Fuzzy techniques.
Mining complex data objects, Spatial databases, Multimedia databases, Time series and Sequence data; mining Text Databases and mining Word Wide Web.

Text Books:
- Data Warehousing In the Real World; Sam Anahory & Dennis Murray; 1997, Pearson

- Data Mining- Concepts & Techniques; Jiawei Han & Micheline Kamber- 2001, Morgan Kaufmann.
- Data Mining Techniques; Arun Pujar; 2001, University Press; Hyderbad.

Reference Books:

- Data Mining; Pieter Adriaans & Dolf Zantinge; 1997, Pearson,
- Data Warehousing, Data Miniing and OLTP; Alex Berson, 1997, Mc Graw Hill.
- Data warehousing System; Mallach; 2000, Mc Graw Hill.
- Building the Data Warehouse; W.H. Inman, 1996, John Wiley & Sons.
- Developing the Data Warehouses; W.H Ionhman,C.Klelly, John Wiley & Sons.
- Managing the Data Warehouses; W.H.Inman, C.L.Gassey, John Wiley & Sons. .

CSE-407-F   **NEURAL NETWORKS**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                           Total Marks: 150
                                                           Duration of Exam: 3 Hrs.

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 biological neurons: Structure of biological neurons relevant to ANNs.

Fundamental concepts of Artificial Neural Networks: Models of ANNs; Feedforward & feedback networks; learning rules; Hebbian learning rule, perception learning rule, delta learning rule, Widrow-Hoff learning rule, correction learning rule, Winner –lake all elarning rule, etc.

Section-B

Single layer Perception Classifier: Classification model, Features & Decision regions; training & classification using discrete perceptron, algorithm, single layer continuous perceptron networks for linearly seperable classifications.

Section-C

Multi-layer Feed forward Networks: linearly non-seperable pattern classification, Delta learning rule for multi-perceptron layer, generalized delta learning rule, Error back propagation training, learning factors, Examples.

Single layer feed back Networks: Basic Concepts, Hopfield networks, Training & Examples.

Section-D

Associative memories: Linear Association, Basic Concepts of recurrent Auto associative memory: retrieval algorithm, storage algorithm; by directional associative memory, Architecture, Association encoding & decoding, Stability.

Self organizing networks: UN supervised learning of clusters, winner-take-all learning, recall mode, Initialization of weights, seperability limitations

TEXT BOOK:
1. Introduction to Artificial Neural systems by Jacek M. Zurada, 1994, Jaico Publ. House.

REFERENCE BOOKS:
1. "Neural Networks: A Comprehensive formulation", Simon Haykin, 1998, AW
2. "Neural Networks", Kosko, 1992, PHI.
3. "Neural Network Fundamentals" – N.K. Bose, P. Liang, 2002, T.M.H

CSE-401-F **ADVANCED COMPUTER ARCHITECTURE**

L T P Class Work Marks: 50
3 1 0 Exam Marks: 100
 Total Marks: 150
 Duration of Exam: 3 Hrs.

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

Architecture And Machines: Some definition and terms, interpretation and microprogramming. The instruction set, Basic data types, Instructions, Addressing and Memory. Virtual to real mapping. Basic Instruction Timing.

Time, Area and Instruction Sets: Time, cost-area, technology state of the Art, The Economics of a processor project: A study, Instruction sets, Professor Evaluation Matrix

Section-B

Cache Memory Notion: Basic Notion, Cache Organization, Cache Data, adjusting the data for cache organization, write policies, strategies for line replacement at miss time, Cache Environment, other types of Cache. Split I and D-Caches, on chip caches, two level Caches, write assembly Cache, Cache references per instruction, technology dependent Cache considerations, virtual to real translation, overlapping the T-cycle in V-R Translation, studies. Design summary.

Section-C

Memory System Design: The physical memory, models of simple processor memory interaction, processor memory modeling using queuing theory, open, closed and mixed queue models, waiting time, performance, and buffer size, review and selection of queueing models, processors with cache.

Section-D

Concurrent Processors: Vector Processors, Vector Memory, Multiple Issue Machines, Comparing vector and Multiple Issue processors. Shared Memory Multiprocessors: Basic issues, partitioning, synchronization and coherency, Type of shared Memory multiprocessors, Memory Coherence in shared Memory Multiprocessors.

TEXT BOOKS:
　　　　1. Advance computer architecture by Hwang & Briggs, 1993, TMH.
　　　　2. Pipelined and Parallel processor design by Michael J. Flynn – 1995, Narosa.

CSE-411-F **COMPILER DESIGN LAB**

L T P
0 0 3

Class Work Marks: 50
Exam Marks: 50
Total Marks: 100
Duration of exam: 3 hrs.

1. Practice of LEX/YACC of compiler writing.
2. Write a program to check whether a string belong to the grammar or not.
3. Write a program to generate a parse tree.
4. Write a program to find leading terminals.
5. Write a program to find trailing terminals.
6. Write a program to compute FIRST of non-terminal.
7. Write a program to compute FOLLOW of non-terminal.
8. Write a program to check whether a grammar is left Recursion and remove left Recursion.
9. Write a program to remove left factoring.
10. Write a program to check whether a grammar is operator precedent.
11. To show all the operations of a stack.
12. To show various operations i.e. red, write and modify in a text file.

Note : At least 10 programs are required to be developed in the semester.

CSE-409-F **VISUAL PROGRAMMING LAB**

L T P	Class Work Marks:	50
0 0 3	Exam Marks:	50
	Total Marks:	100
	Duration of exam:	3 hrs

Study of Visual Basic 6.0 .NET and Visual C++ 6.0 .NET.

1) Study Windows API's. Find out their relationship with MFC classes. Appreciate how they are helpful in finding complexities of windows programming.

2) Get familiar with essential classes in a typical (Document- view architecture) VC++ Program and their relationship with each other.

3) Create an SDI application in VC++ that adds a popup menu to your application which uses File drop down menu attached with the menu bar as the pop-up menu. The pop-up menu should be displayed on the right click of the mouse.

4) Create an SDI application in VC++ using which the user can draw atmost 20 rectangles in the client area. All the rectangles that are drawn should remain visible on the screen even if the window is refreshed. Rectangle should be drawn on the second click of the left mouse button out of the two consecutive clicks. If the user tries to draw more than 20 rectangles, a message should get displayed in the client area that "No more rectangles can be drawn"

5) Create an application in VC++ that shows how menu items can be grayed, disabled and appended at run time.

6) Write a program in VC++ to implement serialization of inbuilt and user defined objects.

7) Write a program in VC++ to create archive class object from C File class that reads and stores a simple structure (record).

8) Make an Active X control in VC++ derived from a standard control.

9) Write a program in VB to implement a simple calculator.

10) Create a simple database in MS Access Database /Oracle and a simple database application in VB that shows database connectivity through DAO and ADO.

11) Write a simple program that displays an appropriate message when the illegal operation is performed using error handling technique in VB.

12) Write a program in VB to create a notepad.

13) Create a DLL in VB.

Bright students may do the following exercises:

14) Write a program in VC++ to implement a simple calculator.

15) Write a program in VC++ to create a static link library and a dynamic link library.

16) Create a simple database in MS Access Database and a simple database application in VC++ that shows database connectivity through ADO model.

17) Make an Active X control of your own using VB.

18) With the help of VB, create an object of excel application and implement any action   on it.

CSIT-404   **PARALLEL COMPUTATION AND APPLICATIONS**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                                              Total Marks: 150
                                                                              Duration of Exam: 3 Hrs.

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

Introduction to Parallel Processing: Criteria for judging the architecture, Architectural classification schemes, Trends towards parallel processing, Parallelism in uni processor systems, Parallel Computer Structure, Applications of parallel processing Principles of Pipelining - Principles of Linear and non-linear pipelining, classification of pipeline processors, general pipelines and reservation tables, Interleaved memory organization .

Section-B

Structures and algorithms for Array Processors: SIMD array processors: SIMD computer organization, Masking and data routing mechanisms, SIMD interconnection networks: static v/s dynamic, mesh connected ILLIAC network, Barrel Shifter network, Shuffle-exchange and omega network.

Section-C

Multiprocessor Architecture: Functional structures, UMA & NUMA multiprocessors. Interconnection Networks: Time shared or common buses, Bus arbitration algorithm, Cross bar switch and multiport memories, Comparison of multiprocessor interconnection structure, multistage networks for multiprocessors, Algorithm Analysis – Mathematical background, what to analyze, Running time calculation, Logarithms in Running time

Section-D

Algorithm design techniques: Greedy algorithms, Simple Scheduling algorithms, Multiprocessor case, Huffman code analysis, Bin packing algorithms, Back tracking algorithms, Turnpike reconstruction algorithm Parallel processing terminology - Speed up, scaled speed up and parallelizability.

Elementary parallel algorithms: Hypercube SIMD model, Shuffle-exchange SIMD model, 2-D mesh SIMD, UMA multiprocessor, Broadcast Matrix multiplication - Algorithms for Processor arrays, Algorithms for multiprocessors and multicomputers. Sorting - Lower bounds on parallel sorting, Odd-Even transposition sort.

TEXT BOOKS:
1. Kai Hwang and Faye A. Briggs, Computer Architecture and Parallel Processing McGraw Hill Series.
2. Kai Hwang, Advanced Computer Architecture, Parallelism, Scalability, Programmability.
3. Michael J. Quinn, Parallel Computing – Theory and Practice – TMH Publication.
4. Mark Allen Weiss, Data Structures and Algorithm Analysis in C, Benjamin/Cummings Publication.

CSE-432-F **DIGITAL IMAGE PROCESSING**

L T P
3 1 0

Class Work Marks: 50
Exam Marks: 100
Total Marks: 150
Duration of Exam: 3 Hrs.

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
Introduction and Fundamental to Digital Image Processing: What is Digital Image Processing, Origin of Digital Image Processing, Examples that use Digital Image Processing, Fundamental steps in Digital Image Processing, Components of Digital Image Processing System, Image sensing and acquisition, Image sampling, quantization and representation, Basic relationship between pixels.

Section-B
Image Enhancement in the Spatial Domain & Frequency domain: Background, Basic gray level transformation, Histogram processing, Basics of spatial filtering, Smoothing and Sharpening Spatial filters, Introduction to Fourier Transform and the Frequency Domain, Discrete Fourier Transform. Smoothing and Sharpening Frequency-Domain filters.
Image Restoration: Image Degradation/Restoration Process, Noise models, Restoration in presence of noise, Inverse Filtering, Minimum Mean Square Filtering, Geometric mean filter, Geometric transformations.

Section-C
Color Image Processing: Color Fundamentals, Color models, Basis of full color image processing, Color transformations.
Image Compression: Fundamentals, Image compression models, Error free compression, Lossy compression.
Image Segmentation: Detection of Discontinuities, Edge linking and boundary detection, Thresholding, Region oriented segmentation.

Section-D
Representation, Description and Recognition: Representation-chain codes, polygonal approximation and skeletons, Boundary descriptors-simple descriptors, shape numbers, Regional descriptors- simple, topological descriptors, Pattern and Pattern classes-Recognition based on matching techniques.
Recognition: Pattern and pattern Classes, Decision-Theoretic Methods.

TEXT BOOK:
1. Digital Image Processing by Rafael C. Gonzalez & Richard E. Woods –2002, Pearson Education.

REFERENCE BOOK:
1. Digital Image Processing by A.K. Jain, 1995,-PHI

CSE-403-F   **SOFTWARE PROJECT MANAGEMENT**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                   Total Marks: 150
                                                   Duration of Exam: 3 Hrs.

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

Introduction to Software Project Management (SPM): Definition of a Software Project (SP), SP Vs. other types of projects activities covered by SPM, categorizing SPs, project as a system, management control, requirement specification, information and control in organization.

Stepwise Project planning: Introduction, selecting a project, identifying project scope and objectives, identifying project infrastructure, analyzing project characteristics, identifying project products and activities, estimate efforts each activity, identifying activity risk, allocate resources, review/ publicize plan.

Section-B

Project Evaluation & Estimation: Cost benefit analysis, cash flow forecasting, cost benefit evaluation techniques, risk evaluation. Selection of an appropriate project report; Choosing technologies, choice of process model, structured methods, rapid application development, water fall, V-process, spiral models. Prototyping, delivery. Albrecht function point analysis.

Activity planning & Risk Management: Objectives of activity planning, project schedule, projects and activities, sequencing and scheduling activities, network planning model, representation of lagged activities, adding the time dimension, backward and forward pass, identifying critical path, activity throat, shortening project , precedence networks.
Risk Management: Introduction, the nature of risk, managing risk, risk identification, risk analysis, reducing the risks, evaluating risks to the schedule, calculating the z values..

Section-C

Resource allocation &Monitoring the control: Introduction, the nature of resources, identifying resource requirements, scheduling resources creating critical paths, counting the cost, being specific, publishing the resource schedule, cost schedules, the scheduling sequence.

Monitoring the control: Introduction, creating the frame work, collecting the data, visualizing progress, cost monitoring, earned value, prioritizing monitoring, getting the project back to target, change control.

Managing contracts and people: Introduction, types of contract, stages in contract, placement, typical terms of a contract, contract management, acceptance, Managing people and organizing terms: Introduction, understanding behavior,

Section-D

Organizational behavior: a back ground, selecting the right person for the job, instruction in the best methods, motivation, working in groups, becoming a team, decision making, leadership, organizational structures, conclusion, further exercises.

Software quality: Introduction, the place of software quality in project planning, the importance of software quality, defining software quality, ISO 9126, Practical software quality measures, product versus process quality management, external standards, techniques to help enhance software quality.

Study of Any Software Project Management software: viz Project 2000 or equivalent

TEXT BOOK:
1. Software Project Management (2nd Edition), by Bob Hughes and Mike Cotterell, 1999, TMH.

REFERENCE BOOKS:
1. Software Engineering – A Practitioner's approach, Roger S. Pressman (5th ed), 2001, MGH
2. Software Project Management, Walker Royce, 1998, Addison Wesley.
3. Project Management 2/c. Maylor
4. Managing Global software Projects, Ramesh, 2001, TMH.

CSIT-410   **MOBILE COMPUTING**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                             Total Marks: 150
                                             Duration of Exam: 3 Hrs.

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

Introduction: Wireless communication, Wireless data technologies, Frequencies for radio signals, antennas and signal propagation, need and types of multiplexing techniques, modulation types, use of spread spectrum, cellular systems.
Medium Access Control: Need for MAC algorithm, medium access methods and comparison of these methods.

Section-B

Digital mobile Phone Systems: GSM: mobile services, system architecture, radio interference, protocols, localization and calling, hand over, security, new data services, other digital cellular networks, comparison with GSM.

Section-C

Wireless LAN: Introduction, advantages and design goals for wireless LAN, Infrastructure, ad-hoc networks, IEEE 802.11: system and protocol architecture, physical layer, HIPERLAN protocol architecture and physical layer and MAC, Blue tooth physical and MAC layer. Wireless ad-hoc networks.
Protocols for mobile computing: Mobile network layer, mobile IP, Snooping TCP, Mobile TCP, Fast and selective retransmission and recovery, Transaction oriented TCP.

Section-D

Wireless Application Protocol: WAP architecture wireless datagram protocol, transport layer security, WML, script.
Palm OS: - Architecture, features of kernel, memory, system managers, Symbian OS: Architecture, hardware interface, memory, management, Window CE: features and architecture.

TEXT BOOKS:
    1. Mobile Communications – Jachen Schiller (Addison- Wesley)
    2. Mobile Computing – Asoke K Talukder, Roopa R Yavgal, (TMH Publishing)

CSE -305-F **ANALYSIS AND DESIGN OF ALGORITHMS**

L T P
3 1 0

Class Work Marks: 50
Exam Marks: 100
Total Marks: 150
Duration of Exam: 3 Hrs.

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

Brief Review of Graphs, Sets and disjoint sets, union, sorting and searching algorithms and their analysis in terms of space and time complexity.

Divide and Conquer: General method, binary search, merge sort, qick sort, selection sort, Strassen's matrix multiplication algorithms and analysis of algorithms for these problems.

Section-B

Greedy Method: General method, knapsack problem, job sequencing with dead lines, minimum spanning trees, single souce paths and analysis of these problems.

Dynamic Programming: General method, optimal binary search trees, O/I knapsack, the traveling salesperson problem.

Section-C

Back Tracking: General method, 8 queen's problem, graph colouring, Hamiltonian cycles, analysis of these problems.

Branch and Bound: Method, O/I knapsack and traveling salesperson problem, efficiency considerations. Techniques for algebraic problems, some lower bounds on parallel computations.

Section-D

NP Hard and NP Complete Problems: Basic concepts, Cook's theorem, NP hard graph and NP scheduling problems some simplified NP hard problems.

TEXT BOOKS:

1. Fundamental of Computer algorithms, Ellis Horowitz and Sartaj Sahni,1978, Galgotia Publ.,
2. Introduction To Algorithms, Thomas H Cormen, Charles E Leiserson And Ronald L Rivest: 1990, TMH

REFERENCE BOOKS:

1. The Design and Analysis of Computer Algorithm, Aho A.V. Hopcroft J.E., 1974, Addison Wesley.
2. Algorithms-The Construction, Proof and Analysis of Programs, Berlion, P.Bizard, P., 1986. Johan Wiley & Sons,
3. Writing Efficient Programs, Bentley, J.L., PHI
4. Introduction to Design and Analysis of Algorithm, Goodman, S.E. & Hedetnieni, 1997, MGH.
5. Introduction to Computers Science- An algorithms approach , Jean Paul Trembley, Richard B.Bunt, 2002, T.M.H.
6. Fundamentals of Algorithms: The Art of Computer Programming Voll, Knuth, D.E.:1985, Naresh Publ.

IT-403-F **SYSTEMS & NETWORK ADMINISTRATION**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                 Total Marks: 150
                                                 Duration of Exam: 3 Hrs.

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

Introduction to Systems and Network Administration: The Scope of Systems and Network Administration, The Goals of Systems and Network Administration, System Components and their Management: Operating Systems: Windows and Unix Variants, File Systems and Standards (UFS, NFS, NTFS), Processes and Job Control, Privileged, User and Group Accounts, Logs and Audits, Systems Performance Tuning:

Section B

Host Management: Booting and Shutting down of an Operating System, Formatting, Partitioning and Building a File System, File System Layout, Concept of swap space, Cloning Systems, OS Installation, Installation and configuration of devices and drivers, Software Installation and Structuring Software, Open Source Software: The GNU Project, Superuser/Administrator Privileges, User Management, Adding/Removing users, Controlling User Resources, Disk Space Allocation and quotas, Process Management and Monitoring, Scheduling Processes, Killing/Stopping processes, Restarting a Process, Monitoring Process Activity, Maintaining Log Files, File System Repair, Backup and Restoration, , Handling Man Pages/Help System, Kernel Customization, Integrating Multiple Operating Systems, System Sharing, User IDs, Passwords and Authentication.

Section C

Network Administration: Introduction to Network Administration Approaches, Addressing and Subnetting : Fixed Vs Variable Masks, VLAN Principles and Configuration, Routing Concepts, Static and Dynamic Routing, Routing Protocols: RIP, OSPF, BGP, Network Address Translation (NAT), Configuring a Linux/Windows Box as a Router, Dial-up configuration and Authentication: PPP, Radius, RAS, Configuring a DNS Server, Configuring Sendmail Service, Configuring a Web Server, Configuring a Proxy Server, TCP/IP Troubleshooting: ping, traceroute, ifconfig, netstat, ipconfig, Network Management.
Section D

Host and Network Security: Security Planning, Categories of Security: C1, C2, C3, C4, Password Security, Access Control and Monitoring: Wrappers, Firewalls: Filtering Rules,

Detection and Prevention of Denial of Service (DOS) Attacks, Automatic Identification of Configuration Loop Holes, Security Information Resources: CERT, Installing and Upgrading System Software, Use of Scripting tools: Shell Scripting, Perl/Python Scripting, Use of Make Option

Security Planning, Categories of Security: C1, C2, C3, C4, password security, Access Control and Monitoring.

Text Books:

- "Principles of Network and System Administration", Mark Burgess, 2000, John Wiley and Sons Ltd,
- "TCP/IP Network Administration" (3rd Edition), Craig Hunt, O'Reilly and Associates Inc., 2002.
- "Windows 2000 Administration", George Splading, 2000, McGraw-Hill.
- "Linux Network Administrator's Guide", Olaf Kirch and Terry Dawson, (2nd Edition), O'Reilly and Associates Inc., 2000, (Shroff Publishers and Distributors, Culcutta)

Software Requirements: Microsoft Windows 2000, Linux, Perl/Python

IT-407-F   SYSTEM AND NETWORK ADMINISTRATION LAB.

L T P   Class Work Marks: 50
0 0 2   Exam Marks: 50
                                              Total Marks: 100
                                              Duration of Exam: 3 Hrs.

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.

- Management of the users & the domain.

- Configuring DHCP.

- Setting up the local security policy.

- Start and stop services from user window and command prompt.

- Use of event viewer.

- Use of the performance monitor.

- Management of the IIS and FJP server.

- Setting up of local area network.

- Setting up of router in Window 2000 server.

- Use of utilities (a) Ping   (b) Trocert   (c) netstat   (d) net
  (e) IP configuration   (f) Path ping

  - Use of network monitor.

  - Setting up of a DNS.

  - Setting up and use "Terminal Clinet Services".

PHY-451-F   **NANO TECHNOLOGY**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                    Total Marks: 150
                                                    Duration of Exam: 3 Hrs.

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
Introduction to Nanotech: Crystalline-Non crystalline materials, Fundamental of Nanotechnology and Nanomaterials in Metals, other Materials, & Biosystem, Molecular Recognition, Quantum Mechanics and Quantum Ideas in Nanotechnology. Semiconductor Nanoparticles.

Section B
Preparation and Characterization of Nanoparticles: Nanoscale Lithography, Dip Pen Lithography, E-Beam Lithography, Nanosphere Life off, Lithography; Molecular Synthesis, Nanoscale Crystal Growth, Polymerization Nanobricks and Building blocks: Tools for Measuring Nanostructures-Scanning Prob Instrument, Spectroscopy, Electrochemistry, Election Microscope Tools to Make Nanostructure.

Section C
Properties & Application of Nano Crystalline Materials: Application in Sensors, Nanoscale Biostructure Electronics, Magnets, optics, Fabrication Biomedical Applications, Smart Materials-Self Healing Structures, Heterogenous Nanostructure and composites En capsulation, Carbon Nanotubes.

Section D
Synthesis of semiconductor Nanoclusters, Processing of Nanomaterials Nanobusiness-Boom, Bust and Nano Tech. NanoEthics

Text Books:
1.   Camarata, R.C. Nanomaterials synthesis, properties and application Institute of Physics Publication.
2.   Madou, Fundamentals of microfabrication, Mcgraw Hill.
3.   Sibelia, J.P., A Guide to Material characterization, Prentice Hall.
4.   Mark Ratner, Daniel Ratner-Nano Technology-A Gentle Introduction to the next big idea.

HUM-457-F   **BUSINESS COMMUNICATION**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                               Total Marks: 150
                                               Duration of Exam: 3 Hrs.

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.

The course proposes to help students develop business and technical communication competence. It focuses on writing skills and strategies for specific purposes. The inevitability of introducing this course to Engineering students is embodied in that it has comparatively a high concentration of certain complex writing techniques and procedures.

Section A

Business Correspondence : Characteristics and formats of Business letter; Quotations, Orders, Tenders, Sales letters, claim and adjustment letters, Credit and Collection letters, Application Letters for vacant situations with emphasis on Resumes and Curriculum Vitae; E-mail and Netiquette-format, style and tone.

Section B

Business Reports and Proposals : Importance, Function, Pattern and formats of Reports, Typical Business Reports, Report Organisation and Presentation, and Formal Reports; Proposal Formats, Writing problem-Solving proposals, Executive Summary Proposals and project Proposals.

Section C

Meetings : Writing of Memorandum, Notes, Agenda and minutes of Meeting.

Section D

Public Relations and Advertising Documents: Press Releases, Public Service announcements, Advertising Strategy and its objective, Designing of Classified and Display Advertising copies.

Text Book:

1.   Business Communication: Process & Product by Hary Ellen Guffey, IV Edition, South-Western College Publishing, Cincinnati.
2.   Business Correspondence and Report Writing by R.C. Sharma & Krishna Mohan, Tata Macgraw Hill Publication, New Delhi.
3.   Effective Business English and Correspondence by M.S. Ramesh and C.C. Pattanshetti, R. Chand & Co., New Delhi. 4. Effective Letters in Business by Robert by C. Shruter, Tata Macgraw Hill, New Delhi.
5.   English Business Letters by F.W. Wing & D. Anncree, Orient Longman.
6.   Written Communication in English by Sarah Freeman, Orient Longman.
7.   International Business English by Leo Jones & Richard Alexander, Cambridge University Press.
8.   General and Business English by Sweet Stephen, Sir Issac Pitman & Sons Ltd., London.
9.   How to Write and Present Technical Information, Charles H. Sides, Cambridge University Press, U.K.
10.   Strategies for Engineering Communication, Susan Stevenson Steve Whitmore, John Wiley and Sons, Inc. Printed in India by Replika Press. Pvt. Ltd., Delhi.

CSIT-402-F   CYBER CRIME INVESTIGATIONS AND CYBER FORENSICS

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                              Total Marks: 150
                                                              Duration of Exam: 3 Hrs.

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
Introduction : Review of TCP/IP and TCP, IP Header analysis, Introduction to Cyber World, Cyber attacks and cyber security, Information warfare and cyber terrorism, Types of cyber attacks, Cyber Crime and Digital Fraud, Overview of Types of computer forensics i.e. Media Forensics, Network forensics (internet forensics), Machine forensic, Email forensic (e-mail tracing and investigations)

Section B
Live Data collection and investigating windows environment: windows Registry analysis, Gathering Tools to create a response toolkit (Built in tools like netstat, cmd.exe, nbtstat, arp, md5sum, regdmp etc and tools available as freeware like Fport, Pslist etc), Obtaining volatile Data (tools like coffee, Helix can be used) Computer forensics in windows environment, Log analysis and event viewer, File auditing, identifying rogue machines, hidden files and unauthorized access points

Section C
Live Data collection and investigating Unix/Linux environment: /Proc file system overview, Gathering Tools to create a response toolkit (Built in tools like losetup, Vnode, netstat, df, md5sum, strace etc and tools available as freeware like Encase, Carbonite etc)

Handling Investigations in Unix/Linux Environment: Log Analysis (Network, host, user logging details), Recording incident time/date stamps, Identifying rogue processes, unauthorized access points, unauthorized user/group accounts,

Section D
Forensic tools and report generation: Recovery of Deleted files in windows and UNIX, Analyzing network traffic, sniffers, Ethical Hacking, Hardware forensic tools like Port scanning and vulnerability assessment tools like Nmap, Netscan etc. Password recovery (tools like John the ripper, L0phtcrack, and THC-Hydra), Mobile forensic tools and analysis of called data record Template for computer forensic reports

TEXT BOOKS:

1. Incident Response & Computer Forensics. Mandia, k., Prosise, c., Pepe, m. 2nd edition. Tata-McGraw Hill, 2003.
2. Guide to Computer Forensics and Investigations, 2nd edition, Bill Nelson, Amelia Phillips, Frank Enfinger, and Chris Steuart , Thomson Learning.

REFERENCE BOOKS:

1. Digital Evidence and Computer Crime, 2nd Edition , Eoghan Casey , academic Press File System Forensic Analysis by Brian Carrier, addition Wesley.
2. Windows Forensic Analysis DVD Toolkit (Book with DVD-ROM), Harlan Carvey, syngress Publication.
3 EnCE: The Official EnCase Certified Examiner Study Guide, 2nd Edition, Steve Bunting, sybex Publication.

IT-471-F   **MANAGEMENT INFORMATION SYSTEM**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                    Total Marks: 150
                                                    Duration of Exam: 3 Hrs.

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

Foundation of Information System : Introduction to Information System and MIS, Decision support and decision making systems, systems approach, the systems view of business, MIS organization within company, Management information and the systems approach.

Section B

Conceptual system design: Define the problems, set systems objects, establish system constraints, determine information needs determine information sources, develop alternative conceptual design and select one document the system concept, prepare the conceptual design report.
Detailed system design: Inform and involve the organization, aim of detailed design, project management of MIS detailed design, identify dominant and trade of criteria, define the sub systems, sketch the detailed operating sub systems and information flow, determine the degree of automation of each operation, inputs outputs and processing, early system testing, software, hardware and tools propose an organization to operate the system, document the detailed design revisit the manager user.

Section C

Implementation evaluation and maintenance of the MIS : Plan the implementation, acquire floor space and plan space layouts, organize for implementation, develop procedures for implementation, train the operating personnel, computer related acquisitions, develop forms for data collection and information dissemination, develop the files test the system cut-over, document the system, evaluate the MIS control and maintain the system. Pitfalls in MIS development.

Section D

Information Technology: Computer hardware & software, DBMS, RDBMS and Telecommunication.
Advanced Concepts in Information Systems: Enterprise Resources Management (ERP), Supply Chain Management, CRM, Procurement Management System.
Text Books:

• Management Information System by W.S. Jawadekar, 2002, Tata McGraw Hill.
• Information System for Modern Management (3rd edition)- Robert G. Murdick, Loel E.   Ross & James R. Claggett. PHI.

Reference Books:

• Management Information System; O Brian; TMH
• Management Information System by Davis Olson Mac Graw Hill.
• Management Information System by Stasllings, (Maxwell Mc Millman Publishers).
• Information System; a Management Perspective; Alter Addison Wesley.
• Introduction to Information System; McGraw Hill.

CH-453-F   **POLLUTION AND CONTROL**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                         Total Marks: 150
                                                         Duration of Exam: 3 Hrs.

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

Waster Water & its treatment Processes: Waster-water characteristics, effluent standards, primary treatment, secondary treatment-aerobic (activated sludge, aerated lagoons, trickling filter, roughing filter, rotating biological contactor) anaerobic (contact process, UASB).

Section B

Air Pollution: Classification of air Pollutants Particulates: Physical characteristics, mode of formation, setting properties, Control measures.
Hydrocarbons : Nature; sources, control Carbon
Monoxide : Source, harmful effects on human health, control measure. Oxides of Sulphur and Nitrogen Sources, effects on human health and plants. Control measure.

Section C

Solid Waste : Types, sources and properties of solid waste, solid waste management-Generation, Collection and techniques for ultimate disposal, Elementary discussion on resource and energy recovery.

Section D

Nuclear Pollution: Elementary treatment of nuclear pollution, metal pollution, noise pollution their effects & control.

Text Books:
   1. Environmental Engg. by Howard S. Peavy & Others, MGH International.
   2. Metacaf-EDDY-Waste-water engineering revised by George Teholonobus (TMH).
   3. Environmental Chemistry by B.K. Sharma, Goel Publishing, Meerut.
   4. Environmental Chemistry, A.K. DE, Wiley Eastern.
   5. Air Pollution: H.C. Perking-McGraw Hill.

HUM-451-E   **LANGUAGE SKILLS FOR ENGINEERS**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                       Total Marks: 150
                                                       Duration of Exam: 3 Hrs.

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.

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The real challenge before the students starts when they cross the threshold of the college after completing their degree. They, all of a sudden, find themselves competing for job/P.G. Degrees, through various entrance tests and interviews. Verbal ability forms a major portion of these tests. Without sound language skills and its semantic-syntactic know-how, the students with engineering background find themselves almost under-prepared for such tests. With this difficulty of students in mind, this course is proposed to make them technically proficient in handling the language skills required in competitive exams. The course would expose students to almost all variety of items, the common run of such tests as CAT, GMAT etc. And in the context of LPG, this cutting edge competence becomes imperative, and no professional education can afford to overlook this aspect.

Section A

Remedial English : Parts of speech, Gerunds, Participles and infinitives; Clauses; Sentence-constructions (unity; avoidance of choppy and rambling sentences, logic and consistency, conciseness, sequencing of ideas); Sentence errors-agreement between verb and subject, pronoun and antecedents, sequence of tenses, problems involving modifiers (dangling and misplaced modifiers); Shifts in point of view consistency of number and person, tense, mood, voice and subject; Parallelism; Omissions and mixed constructions.

Section B

Vocabulary : Methods of building vocabulary-etmological roots, prefixes and suffixes; Commonly used foreign words and phrases; spelling; words often confused synonyms and homonyms; one word substitutes; verbal idioms.

Section C

Punctuation and Mechanics: End Punctuation; internal Punctuation; Word Punctuation.
Comprehension: Abstracting; Summarizing; Observation, Findings and Conclusions; Illustration and Inductive Logic; Deduction and Analogy.

Section D

Presentation: Oral presentation- Extempore, discussion on topics of contemporary relevance, Interviews.

TEXT BOOKS:

1.   Working with words by R. Gairns and S. Redman, Cambridge University Press, London.
2.   Meanings into Words-Upper Intermediate Students Book, Deff/Jones, Foundation Books (Cambridge University Press), Delhi.
3.   A Practical English Grammar by A.J. Thomson and A.V. Martinet, OUP, Delhi.
4.   Examine your English by Margaret M. Maison, Orient Longman, New Delhi.
5.   A Practical Guide to Colloquial Idom by W.J. Ball. Longman.
6.   A guide to correct English by L.A. ill, Oxford.
7.   Structural Essentials of english by H.whitehall, Longman.
8.   Advanced English Practice by B.D. Graver, OUP, Delhi
9.   Public Speaking, Sudha Publication Pvt. Ltd., New Delhi.
10.   Group Discussion, Sudha Publication Pvt. Ltd., New Delhi.

IT-465-F   **NETWORK TECHNOLOGY**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                               Total Marks: 150
                                               Duration of Exam: 3 Hrs.

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 Internet: Address and domain Management, SNMP, Transport Layer issues, TCP/IP, FTP, WWW undergoing technology, E mail talent, FTP, Gateway, Dial-up, SLIP/PPP, Dedicated lines, Internet searching tools, gopher, Archie, Veronica, WWW, Lynx, Mosaic, WAIS, Usenet.

Section B
Security issues, CGI, PERL, HTML, VRML, JAVA, VB script and other internet development tools, internet networking TCP/IP protocols), Network Security and Management.

Section C
Application Layer Services and protocols (RPC, NFC, SMTP, FTP, TELENET), Review of LAN, Principles of IBASE5 (Strain), Transmitter and receiver of IBASE5 (Starian), Node, LAN Manager, Software of IBASE5 Node, 10BASE5 Ethernet and 10BASE2 (Cheaper net), Twisted pair Ethernet, Serial Communication, Connecting LANs and WANS.

Section D
Serial Communication Circuits, Modems, USART-Processor Interface Data Buffer Block of 8251A, Control logic of USART, PROTOCOLS, Transmitter, Receiver, Synchronous Modems and Asynchronous Modems. SYNDET/BRKDET ion 8251A, Monitoring of 8251A, writing characters to be transmitted to 8251A, Monitoring of 8251A. Read status, ISDN: Technology, devices, Architecture Protocols, Flow Control Error detection and Correction, ATM, Technology, Inter Networking SDH/SONET.

Text Book:
- Computer Networks by Tanenbaum, 2003, PHI.
- Computer Networks by Black, 1995, PHI.

Reference Books:
- Data communication & Networking by Furouzan, 2000, TMH.
- Data and Network communications by Miller (Delmer)
- Communication Networks: Fundamentals Concepts & Key Architectures by Alberto Leon, TMH

IT-464-F   **NETWORK SECURITY & MANAGEMENT**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                             Total Marks: 150
                                                             Duration of Exam: 3 Hrs.

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

Introduction: Codes and Ciphers – Some Classifical systems – Stiatistical theory of cipher systems- Complexity theory of crypto systems – Stream ciphers, Block ciphers.
Stream Ciphers: Rotor based system – shift register based systems – Design considerations for stream ciphers – Cryptanalsysis of stream ciphers – Combined eneryption and encoding. Block Ciphers – DES and variant, modes of use of DES.

Section-B

Public key systems – Knacksack systems – RSK – Diffle Hellman Exchange – Authentication and Digital signatures, Elliptic curve based systems.
System Identification and clustering: Cryptology of speech signals – narrow band and wide band systems – Analogue & Digital Systems of speech encryption.

Section-C

Security: Hash function – Authentication: Protocols – Digital Signature standards. Electronics Mail Security – PGP (Pretty Good Privacy) MIME, data Compression technique. IP Security: Architecture, Authentication Leader, Encapsulating security Payload – Key Management. Web security: Secure Socket Layer & Transport Layer security, Secure electronics transactions. Firewalls Design principle, established systems.

Section-D

Telecommunication Network Architecture, TMN management layers, Management information Model, Management servicing and functions, Structure of management information and TMN information model, SNMP v1, SNMP2 & SNMP3, RMON1 & 2, Broadband Network Management (ATM, HFC, DSL), ASN

TEXT BOOKS:
  1. Cryprotography and Network Security: Principal & Practices, 2nd Edition by Upper Saddle River, PHI
  2. Network Management Principles & Practices by Subramanian, Mani (AWL)
  3. SNMP, Stalling, Willian (AWL)
REFERENCE BOOKS:
  1. SNMP: A Guide to Network Management (MGH)
  2. Telecom Network Management by H.H. Wang (MGH)
  3. Network Management by U. Dlack (MGH)

IT-472-F   **INTRODUCTION TO VLSI DESIGN**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                            Total Marks: 150
                                                            Duration of Exam: 3 Hrs.

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
Crystal Growth: MGS, EGS, Czochralspi crystal Puller, Silicon shaping, Wafer Preparation. Epitaxy: Vapour Phase Epitaxy, Epitaxial Layer evaluation Molcullar Beam Epitaxy.
Oxidation: Thermal Oxidation Kinetics, Oxidation techniques, Oxide Properties, Oxidation induced Defects. Lithography: Photolithography, e-beam lithography, X ray Lithography.

Section-B
Reactive Plasma Etching: Plasma Properties, Feature Size control and anisotropic etching, Plasma etching techniques and equipment. Di-electric and Poly-Silicon Film Deposition: Deposition Processes for Poly-Si, SiO_2, SiO_3N_4; Plasma assisted Depositions.

Section-C
Diffusion: A Qualitative view of atomic diffusion in Solids, diffusion mechanisms, Fick's one dimensional diffusion equation, constant source and limited source diffusion, diffusion of Grp3 and 5 impurities in Silicon Impurity sources, diffusion apparatus, Characterization of diffused layers. Ion Implantation:
Introduction, Range Theory, Implantation Equipment Anncaling.

Section-D
Metallization: Metallization applications, Choices, Physical Vapour Deposition. Sputtcring, Metallization Problems. Assembly & Packaging: Package Types, design considerations, Package fabrication technologies, Future trends.
Isolation techniques: Bipolar IC fabrication Process Sequence. n MOS IC fabrication Process Sequence.

TEXT BOOKS:
     1. VLSI Technology, S.M. Sze, 1998, MGH
     2. VLSI Fabrication Principles, S.K. Ghandhi

IT-467-F   **COMPUTER SOFTWARE TESTING**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                  Total Marks: 150
                                                  Duration of Exam: 3 Hrs.

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
Fundamentals and Testing types: First, second and later cycles of testing. Objectives and limits of testing. Overview of S/W development stages, Planning and Design stages and testing during these stages. Glass box code, Regression and Black box testing, Software errors, Categories of software error.
Reporting and analyzing bugs: Problem reports, Content and Characteristics of Problem Report, analysis and Tactics for analyzing a reproducible bug. Making a bug reproducible

Section-B
Problem Tracking System: Objective of Problem Tracking System, tasks of the system, Problem tracking overview, users of the tracking system, mechanics of the database
Test Case Design: Characteristics of a good test, equivalence classes and boundary values, visible state transitions, Race conditions and other time dependencies, load testing. Error guessing, Function equivalence testing, Regression Testing, General issues in configuration testing, printer testing

Section-C
Localization and User Manuals testing: Translated text expands, Character sets, Keyboards, Text filters, Loading, saving, importing, and exporting high and low ASCII, Operating system Language, Hot keys, Error message identifiers, Hyphenation rules, Spelling rules, Sorting Rules, Uppercase and Lowercase conversion, Printers, Sizes of paper, CPU's and video, Rodents, Data formats and setup options, Rulers and measurements, Culture bound Graphics and output, European product compatibility, Memory availability, automated testing, Testing User Manuals, Effective documentation, documentation tester's objective, How testing documentation contributes to software reliability

Section-D
Testing Tools and Test Planning: Fundamental tools, automated acceptance and regression tests, standards, Translucent box testing Overall objective of the test plan: product or tool? Detailed objective, type of test, strategy for developing components of test planning documents, components of test planning documents, documenting test materials
S/W Development tradeoffs and models, Quality-related costs, The development time line, Product design, alpha, Pre-beta, Beta, User Interface freeze, Pre-final, Final integrity testing, Project post-mortems, Legal consequences of defective software, Managing and role of a testing group, independent test agencies

TEXT BOOK:
1.   Testing Computer Software, by Cem Kaner, Jack Falk,Hung Quoc Nguyen, 1999, Pub: Wiley, (Second Edition).

CSIT-406-F   **SOFT COMPUTING**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                    Total Marks: 150
                                                    Duration of Exam: 3 Hrs.

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

Neural Networks: History, overview of biological Neuro-system, Mathematical Models of Neurons, ANN architecture, Learning rules, Learning Paradigms-Supervised, Unsupervised and reinforcement Learning, ANN training Algorithms-perceptions, Training rules, Delta, Back Propagation Algorithm, Multilayer Perceptron Model, Hopfield Networks, Associative Memories, Applications of Artificial Neural Networks.

Section B
Fuzzy Logic: Introduction to Fuzzy Logic, Classical and Fuzzy Sets: Overview of Classical Sets, Membership Function, Fuzzy rule generation.
Fuzzy Operations & Arithmetic: Compliment, Intersections, Unions, Combinations of Operations, Aggregation Operations. Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on Intervals & Numbers, Lattice of Fuzzy Numbers, Fuzzy Equations.

Section C

Fuzzy Logic: Classical Logic, Multivalued Logics, Fuzzy Propositions, Fuzzy Qualifiers, Linguistic Hedges.
Uncertainty based Information: Information & Uncertainty, Nonspecificity of Fuzzy & Crisp Sets, Fuzziness of Fuzzy Sets.

Section D

Introduction of Neuro-Fuzzy Systems: Architecture of Neuro Fuzzy Networks.
Application of Fuzzy Logic: Medicine, Economics etc.
Genetic Algorithm: An Overview, GA in problem solving, Implementation of GA

Text Books:
      1.   "An Introduction to Neural Networks", Anderson J.A., PHI, 1999.
      2.   "Introduction to the Theory of Neural Computation", Hertz J. Krogh, R.G. Palmer, Addison-Wesley, California, 1991.
      3.   "Fuzzy Sets & Fuzzy Logic", G.J. Klir & B. Yuan, PHI, 1995.
      4.   "An Introduction to Genetic Algorithm", Melanie Mitchell, PHI, 1998.

Reference Books:
      1.   "Neural Networks-A Comprehensive Foundations", Prentice-Hall International, New Jersey, 1999.

      2.   "Neural Networks: Algorithms, Applications and Programming Techniques", Freeman J.A. & D.M. Skapura, Addison Wesley, Reading, Mass, (1992).

CSIT-409-F **GRID COMPUTING**

L T P

3 1 0

Class Work Marks: 50
Exam Marks: 100
Total Marks: 150
Duration of Exam: 3 Hrs.

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

Grid Computing: Introduction - Definition - Scope of grid computing

Grid Computing Initiatives: Grid Computing Organizations and their roles – Grid Computing analog – Grid Computing road map.

Section B

Grid Computing Applications: Merging the Grid sources – Architecture with the Web Devices Architecture.

Section C

Technologies: OGSA – Sample use cases – OGSA platform components – OGSI – OGSA Basic Services.

Section D

Grid Computing Tool Kits : Globus Toolkit – Architecture, Programming model, High level services – OGSI .Net middleware Solutions.

TEXT BOOKS:

1. Joshy Joseph & Craig Fellenstein, "Grid Computing", PHI, PTR-2003.
2. Ahmar Abbas, "Grid Computing: A Practical Guide to technology and Applications", Charles River media – 2003.

IT-405-F　　　　**INTRODUCTION TO E-COMMERCE & ERP**

L T P　　　　　　　　　　　　　　　　　Class Work Marks: 50
3 1 0　　　　　　　　　　　　　　　　 Exam Marks: 100
　　　　　　　　　　　　　　　　　　　 Total Marks: 150
　　　　　　　　　　　　　　　　　　　 Duration of Exam: 3 Hrs.

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

Introduction and Concepts: Networks and commercial transactions – Internet and other novelties; networks and electronic transactions today, Model for commercial transactions; Internet environment – internet advantage, worlds wide web and other internet sales venues; Online commerce solutions.
Electronic Payment Methods**: U**pdating traditional transactions; Secure online transaction models; Online commercial environments; digital currencies and payment systems; Offline secure processing; private data networks. Security protocols.

Section B

Electronic Commerce Providers: On-line Commerce options: Company profiles. Electronic Payment Systems: Digital payment systems; First virtual internet payment system; cyber cash model.   On-line Commerce Environments: Servers and commercial environments; Ecommerce servers.
Digital Currencies: Operational process of Digicash, Ecash Trail; Using Ecash; Smart cards; Electronic Data Interchange: basics, EDI versus Internet and EDI over Internet. Strategies, Techniques and Tools, Shopping techniques and online selling techniques.

Section C

ERP- An Enterprise Perspective: Production Finance, Personnel disciplines and their relationship, Transiting environment, MIS Integration for disciplines, Information/Workflow, Network Structure, Client Server Integrator System, Virtual Enterprise.
ERP – Resource Management Perspective: Functional and Process of Resource. Management, Introduction to basic Modules of ERP System: HRD, Personnel Management, Training and Development, Skill Inventory, Material Planning and Control, Inventory, Forecasting, Manufacturing, Production Planning, Production Scheduling, Production Control, Sales and Distribution, Finance, Resource Management in global scenario.

Section D

ERP - Information System perspective: Introduction to OLAP (Online Analysis and Processing), TP, OAS, KBS, MRP, BPR,. SCM, REP, CRM, Information Communication Technology.

ERP-Key Managerial issues: Concept Selling, IT Infrastructure, Implication, of ERP Systems on Business Organization, Critical success factors in ERP System, ERP Culture Implementation Issues, Resistance to change, ERP Selection issues, Return on Investment, Pre and Post Implementation Issues.

Text Book:
- "Frontiers of electronics Commerce" Ravi lalakota, Andrew Whinston ,1996, Addision Wesley,
- Enterprise Resource Planning-Concepts and Practice, V.K. Garg and N.K. Venkita Krishna, 1998, PHI.

Reference Books:
- The SAP/3 Handbook, John Antonio, Fernandz, TMH.
- "The E-Business Revolution" Denial amor Addision Wesley
- "From Edi to E-Commerce: A Business Initiative" Sokol TMH
- "E Commerce" Greenstein and Feinman TMH
- "E Commerce" Excel, Diwan, Sharma
- Asset International "Net Commerce" TMH
- "E Commerce: The Cutting Edge of Business" Bajan And Nag TMH
- E-Commerces- Jaffrey F. Rayport , Bernard J. Jaworski, 2002, T.M.H
- Electronic Commerce – Security , Risk management and Control , Greenstein, Feinman, 2002, T.M.H

CSE-402-F **DISTRIBUTED OPERATING SYSTEM**

L T P
3 1 0

Class Work Marks: 50
Exam Marks: 100
Total Marks: 150
Duration of Exam: 3 Hrs.

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

Introduction to   Distributed System, Goals of Distributed system, Hardware and Software concepts, Design issues. Communication in distributed system: Layered protocols, ATM networks, Client – Server model, Remote Procedure Calls and Group Communication. Middleware and Distributed Operating Systems.

Section-B

Synchronization in Distributed System: Clock synchronization, Mutual Exclusion, Election algorithm, the Bully algorithm, a Ring algorithm, Atomic Transactions, Deadlock in Distributed Systems, Distributed Deadlock Prevention, Distributed Deadlock Detection.

Section-C

Unit-3: Processes and Processors in distributed systems: Threads, System models, Processors Allocation, Scheduling in Distributed   System, Real Time Distributed Systems.
Unit-4: Distributed file systems: Distributed file system Design, Distributed file system Implementation, Trends in Distributed file systems.

Section-D

Distributed Shared Memory: What is shared memory, Consistency models, Page based distributed shared memory, shared variables distributed shared memory.
Case study MACH: Introduction to MACH, process management in MACH, communication in MACH, UNIX emulation in MACH.

Text Book:
1. Distributed Operating System – Andrew S. Tanenbaum, PHI.

IT-470-F   **WEB ENGINEERING**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                           Total Marks: 150
                                                           Duration of Exam: 3 Hrs.

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

Information Architecture: The role of the Information Architect, Collaboration and Communication, Organizing Information, Organizational Challenges, Organizing Web sites and Intranets, Creating Cohesive Organization Systems Designing Navigation Systems, Types of Navigation systems, Integrated Navigation Elements, Remote Navigation Elements, Designing Elegant Navigation Systems, Searching Systems, Searching your Web Site, Designing the Search Interface, Indexing the Right Stuff, To search or Not To Search, Grouping Content, Conceptual Design, High-Level Architecture Blueprints, Architectural Page Mockups, Design Sketches.

Section-B

Dynamic HTML and Web Designing: HTML Basic Concepts, Good Web Design, Process of Web Publishing, Phases of Web Site development, Structure of HTML documents, HTML Elements-Core attributes, Language attributes, Core Events, Block Level Events, Text Level Events, Linking Basics, Linking in HTML, Images and Anchors, Anchor Attributes, Image maps, Semantic Linking Meta Information, Image Preliminaries, Image Download Issues, Image as Buttons,

Section-C

Introduction to Layout: Backgrounds, Colors and Text, Fonts, Layout with Tables. Advanced Layout: Frames and Layers, HTML and other media types. Audio Support in Browsers, Video Support, Other binary Formats. Style Sheets, Positioning with Style sheets. Basic Interactivity and HTML: FORMS, Form Control, New and emerging Form elements.

Section-D

Java Server Pages and Active Server Pages: Basics, Integrating Script, JSP/ASP Objects and Components, configuring and troubleshooting,: Request and response objects, Retrieving the contents of a an HTML form, Retrieving a Query String, Cookies, Creating and Reading Cookies. Using application Objects and Events.

Overview of advance features of XML

TEXT BOOKS:
1. HTML The complete Reference, TMH
2. CGI Programming with Perl 2/e, Scott Guelich, Shishir Gundavaram, Gunther Birzniek; O'Reilly
3. Doug Tidwell, James Snell, Pavel Kulchenko; Programming Web Services with SOAP, O' Reilly
4. Pardi, XML in Action, Web Technology, PHI

CSE-448-F **OBJECT ORIENTED SYSTEMS DEVELOPMENT**

L T P
3 1 0

Class Work Marks: 50
Exam Marks: 100
Total Marks: 150
Duration of Exam: 3 Hrs.

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

Introduction: Review of the Traditional Methodologies, Advantages of Object Oriented Methodologies over Traditional Methodologies, Classes, Objects, Encapsulation, Association, Aggregation, Inheritance, Polymorphism, States and Transitions. Visual Modelling using Unified Modelling Language (UML): What is Visual Modelling? ObjectOriented Modelling, Introduction to Unified Modelling Language (UML): History of UML, Overview of UML – Capabilities, Usage of UML.
Introduction to Rational Rose CASE tool: Introduction – Importance of Rational Rose, Capabilities of Rational Rose Case Tool.

Section-B

Introduction to Objectory Software Development Process: Introduction, Benefits, Phases and Iterations, Elaboration Stage, Construction Stage, Transition Stage. Creating Use Case Diagrams: Actors and Use Cases, Use Case Relationships, Types of Relationships, Use Case Diagrams: Creating Main Use Case, Relationships, Additional Use Case - Diagrams in Rational Rose, Activity Diagrams Activities, Transitions, Decision Points, Swimlanes

Identifying Classes ,Packages and drawing a Class Diagram: State, Behaviour, Identity of Objects, Stereotypes and Classes, Creating and Documenting Classes in rational Rose, Packages, Drawing a Class Diagram Specifying Relationships : The Need of Defining Relationships, Association and Aggregation Relationships, Naming Relationships, Role Names, Multiplicity Indicators, Reflexive Relationships, Package Relationships, Inheritance, Finding Relationships, Creating Relationships in Rational Rose

Section-C

Discovering Object Interactions: Documenting Scenarios using Interaction Diagrams, Types of Interaction Diagrams, Adding Behaviour and Structure: Representing Behaviour and Structure, Creating Attributes & operations and documenting them, Displaying attributes and

operations, Association Classes, Analysing Object Behaviour: Modelling Dynamic Behaviour, States.

Checking the Model: Making the Model Homogeneous, Combining Classes, Splitting Classes, Eliminating Classes, Consistency Checking, Scenario Walk-through, Event Tracing, Documentation Review.

Section-D

Designing the System Architecture : The need for Architecture, The "4+1" view of Architecture, The Logical view, The Component View, The Process View, The Deployment View, The Use Case view.

The Iteration Planning Process: Benefits, Goals, Design the User Interface, Adding Design Classes, The Emergence of Patterns, Designing Relationships, Designing Attributes and Operations, Designing for Inheritance, Coding, Testing, and Documenting the Iteration.

TEXT BOOKS:
1. "UML User Guide", Grady Booch, James Rumbaugh, Ivar Jacobson, 2000, Addison Wesley.
2. Visual Modeling with Rational Rose 2000 and UMLBy Terry Quatrani Foreword by Grady Booch, 2000.

REFERENCE BOOKS:
1. "UML Reference Guide", James Rumbaugh, Ivar Jacobson, Grady Booch, 2000, Addison Wesley.
2. "The Objectory Software Development Process", Ivar Jacobson, Grady Booch, James Rumbaugh, 1999, Addison Wesley.
3. UML Distiled by Maxtin Fowler with Kendall Scott,2000 ,Second Edition.
4. Sams Teach Yourself "UML" In 24 Hours By Joseph Schmuller ,2000.

CSE-444-F   **FUZZY LOGIC**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                         Total Marks: 150
                                         Duration of Exam: 3 Hrs.

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
Classical and Fuzzy Sets: Overview of Classical Sets, Membership Function, a-cuts, Properties of a-cuts, Decomposition, Theorems, Extension Principle,
Operations on Fuzzy Sets: Compliment, Intersections, Unions, Combinations of Operations, Aggregation Operations

Section-B
Fuzzy Arithmetic: Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on intervals & Numbers, Lattice of Fuzzy Numbers, Fuzzy Equations.

Fuzzy Relations: Crisp & Fuzzy Relations, Projections & Cylindric Extensions, Binary Fuzzy Relations, Binary Relations on single set, Equivalence, Compatibility & Ordering Relations, Morphisms, Fuzzy Relation Equations.

Section-C
Possibility Theory: Fuzzy Measures, Evidence & Possibility Theory, Possibility versus Probability Theory.
Fuzzy Logic: Classical Logic, Multivalued Logics, Fuzzy Propositions, Fuzzy Qualifiers, Linguistic Hedges.

Section-D
Uncertainty based Information: Information & Uncertainity, Nonspecificity of Fuzzy & Crisp sets, Fuzziness of Fuzzy Sets.
Applications of Fuzzy Logic in soft computing.

TEXT / REFERENCE BOOKS:
1. Fuzzy Sets, Uncertainty & Information by G.J.Klir & T.A. Folyger, PHI, 1988.
2. Fuzzy sets & Fuzzy logic by G.J.Klir & B.Yuan, PHI, 1995.

CSE-446-F **NATURAL LANGUAGE PROCESSING**

L T P   Class Work Marks: 50
33 1 0   Exam Marks: 100
                                                  Total Marks: 150
                                                  Duration of Exam: 3 Hrs.

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

Components of natural language processing: lexicography, syntax, semantics, pragmatics: word level representation of natural languages prosoty & natural languages.

Formal languages and grammars: chomsky hierarchy, Left-Associative grammars, ambiguous grammars, resolution of ambiguities.

Section-B

Computation linguistics: recognition and parsing of natural language structures: ATN & RTN,General techniques of parsing: CKY, Earley & Tomitas algorithm.

Section-C

Semantics-knowledge representation semantic networks logic and inference pragmatics, graph models and optimization, prolog for natural language semantic.

Section-D

Application of NLP: intelligent work processors: Machine translation, user interfaces, Man- Machine interfaces, natural language querying, tutoring and authoring systems, speech recognition, commercial use of NLP.

TEXT BOOK:
   1. "Natural Language Understanding" James Allen, Benjamin-1995, Cummings Pub. Comp. Ltd.

REFERENCE BOOKS:
   1. "Language as a cognitive process", Terry Winograd 1983, AW
   2. "Natural Language processing in prolog" G. Gazder, 1989, Addison Wesley.
   3. " Introduction of Formal Language Theory, Mdlj Arbib & Kfaury, 1988, Springer Verlog.

CSE-442-F **HUMAN COMPUTER INTERACTION**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                                 Total Marks: 150
                                                                 Duration of Exam: 3 Hrs.

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

Introductions & overview of HCI: History of computer user interfaces, HCI – history and intellectual root Human information processing limitations, human decision making.
1. Human cognitive and sensory limits
2. Human memory
3. Human problem solving
4. Skill acquisition
5. Users' conceptual models (mental models)
6. Decision making
Computer systems and user interfaces, human-system interaction:
Input and output devices, Mechanics of particular devices, Speech input, sound and speech output, Computer architecture, Performance characteristics of humans and systems, Color issues, Computer graphics , Color representation, color maps, color range of devices

Section-B

Interaction models and metaphors:
Use of abstract metaphors for describing interface behavior, Use of metaphors to support user understanding, Dialog input and output techniques and purposes , Screen layout issues, Dialog interaction: types and techniques, navigation and orientation, multimedia and non graphical dialogues.
Dialog issues: response time, control, standards, look and feel , Layers model of architecture of design and windowing systems, Windows manager models, e.g., X, Macintosh, MS Windows, Hypermedia and WWW

Section-C

Principles guiding well-designed human-system interaction: Paradigms for interaction, Principles to support usability, Accounting for users with disabilities

The design process – overview: The typical software development lifecycle (idealized vs. actual), User-centered design overview, "Three pillars of design", Usability engineering overview, Reconciling UCD and usability testing

The design process - task and user needs analysis: Task analysis definition, Techniques for task analysis, Sources of information

Section-D

The design process – making use of task and user data for system design.

Use cases, scenarios, Structuring the information, Information architecture, User and process flows, Wireframes, Mockups, comps, Other methods of conveying structure and function

Designing for universal access: What is accessibility? What is accessible software, Examples of accessibility adaptations, what's driving software accessibility, Implications for software organizations?

Speech user interfaces: Attributes of speech user interfaces, Evaluating speech user interface quality

HCI in mission-critical and high-risk environments: Safety implications of human-computer interaction, Effects of automation, addressing the effects

TEXT BOOKS:
1. Hackos, J.T. & Redish, J.C. (1998). User and task analysis for interface design. John New York: Wiley & Sons.
2. Norman, D. (1988). The design of everyday things. New York: Basic Books.

REFERENCE BOOKS:
1. Designing the User Interface: Strategy for Effective Human Computer Interaction, 3rd edition, Bel Shneiderman, Perason Edu. Publ. 2000.
2. Human Computer Interaction   Dix, A et al. Prentice Hall 1993
3. Graphical User Interface Design and Evaluation   Redmond-Pyle, D. & Moore, A. Prentice Hall 1995
4. The Art of Human-Computer Interface Design   Laurel, B   Addison-Wesley 1990

IT-468-F   **LOGIC & FUNCTIONAL PROGRAMMING**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                Total Marks: 150
                                                Duration of Exam: 3 Hrs.

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

Procedural and non-procedural lang.: Prolog Vs LISP, Applications of LISP & PROLOG in designing expert system
Syntax of PROLOG, Lists, Operators, Arithmetic, Structures, Controlling Back Tracking.

Section-B

Input and Ouput, built- in predicates, Operations on Data structures, Advanced Tree Represetation.

Section-C

Prolog in Artificial Inteligence : writing programme for search techniques. Constarint logic programming. Knowledge representation and expert system, expert system shell.

Section-D

Planning, Machine Learning, Inductive Logic Programming, quantative Reasoining, Language Processing, Game Playing, Meta Programming.

TEXT BOOKS:
         1. Prolog Programming for Artificial Intelligence by Ivan Bratko 2001, Pearson Edu.

REFERENCE BOOKS:
         1. Symbolic Computing with Lisp & Prolog - by Mueller, JW 1998
         2. Programming in turbo PROLOG by Lee Teft - PHI.

CSIT-403-F   **SOFTWARE QUALITY ASSURANCE**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                               Total Marks: 150
                                               Duration of Exam: 3 Hrs.

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

Concepts: Concepts of Quality Control, Quality Assurance, Quality Management – Total Quality Management; Cost of Quality; QC tools - 7 QC Tools and Modern Tools; Other related topics - Business Process Re-engineering –Zero Defect, Six Sigma, Quality Function Deployment, Benchmarking, Statistical process control.

Section B

Software Engineering Concepts: Software Engineering Principles, Software Project Management, Software Process, Project and Product Metrics, Risk Management, Software Quality Assurance; Statistical Quality Assurance - Software Reliability, Muse Model; Software Configuration Management; Software Testing; CASE (Computer Aided Software Engineering).

Section C

Quality Assurance Models. Models for Quality Assurance-ISO-9000 - Series, CMM,
SPICE, Malcolm Baldrige Award.

Section D

Software Quality Assurance related topics. Software Process - Definition and implementation; internal Auditing and Assessments; Software testing -Concepts, Tools, Reviews, Inspections & Walkthroughts; P-CMM.
Future Trends .PSP and TSP, CMMI, OO Methodology, Clean-room software
engineering, Defect injection and prevention.

Text Books:

1. Watts Humphery, "Managing Software Process ", Addison - Wesley, 1998.
2. Philip B Crosby, " Quality is Free: The Art of Making Quality Certain ", Mass Market, 1992.
3. Roger Pressman, "Software Engineering ", Sixth Edition, McGraw Hill, 2005

IC-403-F   **EMBEDDED SYSTEMS DESIGN**

L T P
3 1 0

Class Work Marks: 50
Exam Marks: 100
Total Marks: 150
Duration of Exam: 3 Hrs.

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
Introduction: Embedded microcontrollers, External memory microcontrollers; processor Architectures: Harvard V/S Pronceton, CISE V/S RISC; Microcontroller's memory types, Microcontroller's features: clocking, I/O pins, interrupts, timers, peripherals.

Section B
Microcontroller Architecture Introduction to PIC microcontrollers, Architecture and pipelining, program memory considerations, Addressing modes, CPU registers, Instruction set, simple operations.

Section C
Interrupts and I/O Ports Interrupt logic, Timer 2 scalar initialization, Int Service Interrupt service routine, loop time subroutine, External interrupts and timers, Synchronous serial port module, Serial peripheral device, O/p port Expansion, I/p port expansion, UART.
Software Development tools/environments, Assembly language programming style, Interpreters, High level languages, Intel hex format object files, Debugging.

Section D
Programming with Microcontrollers Arithmetic operations, Bit addressing, Loop control, Stack operation. Subroutines, RAM direct addressing, state machines, Oscillators, Timer Interrupts, Memory mapped I/O.
Designing using microcontrollers: Music box, Mouse wheel turning, PWN motor control, Aircraft Demonstration, ultra sonic distance measuring, Temperature Sensor, Pressure Sensor, and Magnetic Field Sensor.

TEXT BOOK:
    1. Design with PIC Microcontrollers by John B. Peatman, Pearson.

REFERENCE BOOKS:
    1. Programming and Customizing the 8051 Microcontroller: Predko : TMH.
    2. Designing Embedded Hardware: John Catsoulis; Shroff Pub. & Distr. ND
    3. Programming Embedded Systems in C & C++: Michael Barr; Shroff Pub & Distr ND.

CSIT-405-F   **INFORMATION STORAGE & MANAGEMENT**

L T P   Class Work Marks: 50
3 1 0   Exam Marks: 100
                                                       Total Marks: 150
                                                       Duration of Exam: 3 Hrs.

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
Complexity of Information Management: Proliferation of Data, Data Center Evolution, Managing Complexity, I/O and the five pillars of technology, Storage Infrastructure, Evolution of Storage.

Section B
Storage Systems Architecture: Modern Storage Systems, Storage Systems, Intelligent Disk Subsystems, Physical Disks, Back End, Cache, Front End, Host Environment.

Section C
Introduction to Networked Storage: Storage Networking Overview, Direct Attached Storage, Storage Area Networks, Case study – Applying SAN concepts, Network Attached Storage, Case study – Applying NAS concepts, IP SAN, CAS, Hybrid Network Storage Based Solutions/ Emerging Technologies, Case study – Applying SAN, NAS, IP SAN concepts.

Section D
Introduction to Information Availability: Business Continuity Overview, Data Availability, Business Continuity – Local, Case study – Applying local information availability strategies, Business Continuity – Remote, Case study – Applying remote information availability strategies, Disaster Recovery.

Managing and Monitoring: Monitoring in the Data Center, Case study – Monitoring exercise, Management in the Data Center, Case study – Managing exercise.

TEXT BOOK:
1. Marc Farley Osborne, "Building Storage Networks", Tata McGrawHill, 2001.
2. Robert Spalding, "Storage Networks: The Complete Reference", Tata Mcgraw Hill, 2003.
3. NIIT, "Introduction to Information Security Risk Management", PHI, 2000.

CSIT-410-F **SEMINAR**

L T P   Class Work Marks: 50
0 0 2   Total Marks: 50

Resume / Report Preparation /Letter writing: Students prepare their own resume and report.

Presentation Skills: Students make presentations on given topics. Every student will be required to present a seminar talk on a topic approved by the department. The committee constituted by the Head of the Department will evaluate the presentation.
Group Discussion: Students participate in group discussions.
Interview Skills: Students participate in Mock interviews.

Note: Classroom sessions are practice sessions.

CSE-413-F   **PROJECT**

L T P   Class Work Marks: 100
0 0 8   Exam Marks: 100
                                                              Total Marks: 200
                                                              Duration of Exam: 3 Hrs.

GFCSE-402-F   **GENERAL FITNESS FOR THE PROFESSION**

L   T   P   Class Work : 50 Marks
-   -   2   Practical   : 100 Marks
                                                       Total Marks : 150 Marks

At the end of each year students will be evaluated on the basis of their performance in various fields.   The evaluation will be made by the panel of experts/examiners/teachers to be appointed by the Principal/Director of the College.   A specimen performs indicating the weight age to each component/ activity is given below:-

Name : _____College Roll No. _____
Univ.Roll No._____ _____
Branch _____Year of Admission _____._____

I. Academic Performance (15 Marks):
   (a) Performance in University Examination:-

Sem.	Result	%age of Marks obtained exam.	Number of Attempt in which the Sem. has been cleared
I			
II			
III			
IV			
V			
VI			
VII			

II. Extra Curricular Activities (10 Marks):

Item	Level of Participation	Remarks (Position Obtained)
Indoor Games (Specify the Games)	_____ _____ _____ _____	
Outdoor Games (Specify the Games)	_____ _____ _____	
Essay Competition	_____ _____ _____	

Scientific Technical Exhibitions	_____ _____ _____
Debate	_____ _____ _____
Drama	_____ _____ _____
Dance	_____ _____ _____
Music	_____ _____ _____
Fine Arts	_____ _____ _____
Painting	_____ _____ _____
Hobby Club	_____ _____ _____
N.S.S	_____ _____ _____
Hostel Management Activities	_____ _____ _____
Any other activity (Please Specify)	_____ _____ _____

III. Educational tours/visits/Membership of Professional Societies (5 Marks)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

IV. Contribution in NSS Social Welfare Floor Relief/draught relief/Adult Literacy mission/Literacy Mission/Blood Donation/Any other Social Service (5 Marks)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

V. Briefly evaluate your academic & other performance & achievements in the Institution (5 Marks)

_____
_____
_____
_____

VI. Performance in Viva voce before the committee (10 Marks)

_____
_____
_____
_____
_____

*Marks obtained 1.(   )+II(   )+III(   )+IV(   )+V(   )+VI(   ) =

**Total Marks:

Member   Member   Member   Member   Member