M.D.UNIVERSITY, ROHTAK
Bachelor of Engineering (Information Technology)
Scheme of studies / Examination
SEMESTER III
Modified 'E' Scheme effective from 2006-07

Sl. No	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Total	Marks of Class work	Theory	Practical	Total	
1	MATH-201-E	**Mathematics III (Common with all branches)**	3	2	-	5	50	100	-	150	3
2	CSE-201 E	**Data Structures & Algorithms (CSE,EL,IT,EI)**	3	1	-	4	50	100	-	150	3
3	CSE-203 E	**Discrete Structures (CSE,IT)**	3	1	-	4	50	100	-	150	3
4	EE-217-E	**Digital & Analog Communication (IT,CSE)**	3	1	-	4	50	100	-	150	3
5	EE-204-E	**Digital Electronics** (CSE, IT & common with IV Sem. EL,EE,EI, IC)	3	1	-	4	50	100	-	150	3
6	HUM-201-E	**Economics (Common with all branches)**	3	1	-	4	50	100	-	150	3
7	IT-201 E	**PC Lab. (CSE, IT)**	-	-	3	3	50	-	50	100	3
8	CSE-205 E	**Data Structures & Algorithms Lab** (CSE,IT)	-	-	3	3	50	-	50	100	3
9	EE-224-E	**Digital Electronics Lab (Common with 4th Sem. - EL,EE,EI, IC)**	-	-	2	2	25	-	25	50	3
		TOTAL	**18**	**7**	**8**	**33**	**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. **The practical hours for the subjects IT-201 E (PC Lab) and CSE-205 E (Data Structure & Algorithms Lab.) has been increased from 2 hours to 3 hours. The marks of class work as well as practical examination in these subjects have been increased from 25 each to 50 each. Thus the total marks for these subjects shall be 100 in place of 50 from the session 2006-07.**
3. **The grand total of semester marks shall be 1150 in-place of 1050 marks.**

M.D.UNIVERSITY, ROHTAK
Bachelor of Engineering (Information Technology)
Scheme of studies / Examination
SEMESTER IV
Modified 'E' Scheme effective from 2006-07

Sl. No.	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Total	Marks of class work	Theory	Practical	Total	
1	CSE-202 E	Data Base Management Systems (CSE,IT)	3	1	-	4	50	100	-	150	3
2	CSE-204 E	Programming Languages (CSE,IT)	3	1	-	4	50	100	-	150	3
3	CSE-208 E	Internet Fundamentals (CSE,IT)	3	1	-	4	50	100	-	150	3
4	IT-202 E	Object Oriented Programming using C++ (CSE,IT)	3	1	-	4	50	100	-	150	3
5	CSE-210 E	Computer Architecture & Organization (CSE, IT and common with V-sem. EL,EI,IC)	3	1	-	4	50	100	-	150	3
6	IT-204 E	Multimedia Technologies (Common with CSE – V Sem.)	3	-	-	3	50	100	-	150	3
7	CSE-216 E	Data Base Management Lab.	-	-	2	2	25	-	25	50	3
8	IT-206 E	C++ Programming Lab. (CSE,IT)	-	-	2	2	25	-	25	50	3
9	IT-208 E	Multimedia Technologies Lab (Common with CSE – V Sem.)	-		2	2	25	-	25	50	3
10	CSE-214 E	Internet Lab. (CSE, IT)	-	-	2	2	25	-	25	50	3
11	GPIT-202 E	General Proficiency	-	-	-	-	50	-	-	50	3
		TOTAL	18	5	8	31	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.**
3. **A new lab. Data Base Management Lab. (CSE-216-E) has been introduced w.e.f. 2006-07.**

M.D. UNIVERSITY, ROHTAK
Bachelor of Engineering (Information Technology)
Scheme of studies / Examination
SEMESTER V
Modified 'E' Scheme effective from 2007-08

Sl. No	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Total	Marks of Class work	Theory	Practical	Total	
1	IT-301-E	Rapid Application Development	3	1		4	50	100	-	150	3
2	IT-303-E	System Programming & System Administration (Common with CSE – VIth Sem)	3	1	-	4	50	100	-	150	3
3	IT-305-E	Computer Networks (IT, AEI, Common with CSE & EL– VIth Sem)	3	1	-	4	50	100	-	150	3
4	CSE-301-E	Principles of Operating System (CSE,IT)	3	1	-	4	50	100	-	150	3
5	EE- 309-E	Microprocessor & Interfacing (EL,CSE,IT,EI, IC, EEE, AEI)	3	1	-	4	50	100	-	150	3
6	CSE-303-E	Computer Graphics (CSE,IT)	3	1	-	4	50	100	-	150	3
7	IT-307-E	Rapid Application Development Lab	-	-	2	2	25	-	25	50	3
8	CSE-309-E	Computer Graphics Lab (CSE,IT)	-	-	3	3	50	-	50	100	3
9	CSE-313-E	Operating Systems Lab. (CSE, IT Common with CSE – V Sem)	-	-	2	2	25	-	25	50	3
10	EE-329- E	Microprocessor & Interfacing Lab. (CSE, IT, EL, EI, IC, AEI, EEE)	-	-	2	2	25	-	25	50	3
11	IT-309-E	Practical Training-I	-	-	2	2	-	-	-	-	-
		TOTAL	18	6	11	35	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) **The marks of class work as well as practical examination in the subject CSE-309 E (Computer Graphics Lab.) has been increased from 25 each to 50 each. Thus the total marks for the subjects shall be 100 in place of 50 from the session 2007-08.**
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) **The course number of the subject of Operating System Lab. has been changed from CSE-308E to CSE-313E and will be implemented w.e.f. 2007-08.**

M.D. UNIVERSITY, ROHTAK
Scheme of studies & Examination
Bachelor of Engineering (Information Technology)
Semester VI
Modified E' Scheme effective from 2007-08

Sl. No.	Course No.	Subject	Teaching Schedule				Examination Schedule				Duration of Exam (Hours)
			L	T	P	Total	Marks of Class work	Theory	Practical	Total	
1	IT-302 E	Network Programming	3	1		4	50	100	-	150	3
2	CSE-302 E	Principles of Software Engineering (CSE,IT)	3	1	-	4	50	100	-	150	3
3	CSE-304 E	Intelligent Systems (CSE,IT)	3	1	-	4	50	100	-	150	3
4	CSE-307 E	Web Development (Common with CSE – V Sem,)	3	1	-	4	50	100	-	150	3
5	EE-402-E	Wireless Communication (CSE, IT and Common with 8th Sem–EL)	3	1	-	4	50	100	-	150	3
6	EE-407-E	Digital Signal Processing	3	1	-	4	50	100	-	150	3
7	IT-304 E	Network Programming Lab. (EL,IT, AEI)	-	-	2	2	25	-	25	50	3
8	CSE-306 E	Intelligent Systems Lab. (CSE,IT)	-	-	3	3	25	-	25	50	3
9	CSE-311 E	Web Development & Core JAVA Lab. (Common with V Sem – CSE)	-	-	2	2	25	-	25	50	3
11	GPIT-302 E	General Proficiency	-	-	-	-	50	-	-	50	
		TOTAL	**18**	**6**	**7**	**31**	**425**	**600**	**75**	**1100**	**-**

Note:

1) **Each student has to undergo practical training of 6 weeks during summer vacation and its evaluation shall be carried out in the VII semester.**
2) **Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.**
3) **The practical hour for the subject CSE-306 E (Intelligent System Lab.) has been increased from 2 hours to 3 hours w.e.f. this session 2007-08.**

M.D.UNIVERSITY, ROHTAK
Scheme of studies & Examination
Bachelor of Engineering (Information Technology)
SEMESTER VII
Modified 'E' Scheme effective from 2006-07

Sl. No	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam
			L	T	P	Total	Marks of Class work	Theory	Practical	Total	
1	IT-401 E	Data Warehousing & Data Mining	3	1	-	4	50	100	-	150	3
2	CSE-403E	Software Project Management (CSE,IT)	3	1	-	4	50	100	-	150	3
3	IT-403 E	System & Network Administration	3	1	-	4	50	100	-	150	3
4	IT-405 E	Introduction to E-commerce & ERP	3	1	-	4	50	100	-	150	3
5		*OPEN ELECTIVES	4	-	-	4	50	100	-	150	3
6	IT-407 E	System & Network Administration Lab.	-	-	3	3	25	-	50	75	3
6.	CSE-409 E	Visual Porgramming Lab. (CSE, IT)	-	-	2	2	25	-	50	75	3
7	IT-409 E	Project	-	-	4	4	50	-	-	50	
8	IT-411 E	Practical Training-II	-	-	2	2	-	-	-	-	-
		TOTAL	**16**	**4**	**11**	**31**	**350**	**500**	**100**	**950**	

List of Open Electives

1	HUM-451-E	Language Skills for Engineers	8	CSE-451-E	Artificial Intelligence & Expert Systems
2	HUM-453-E	Human Resource Management	9	CSE-303-E	Computer Graphics
3	HUM-457-E	Business Communication	10	IC-455-E	Intelligent Instrumentation for Engineers
4	HUM-455-E	Entrepreneurship	11	IC-403-E	Embedded Systems & Design
5	PHY-451-E	Nano technology	12	CH-453-E	Pollution & Control
6	PHY-453-E	Laser Technology	13	IT-471-E	Management Information System
7	ME-451-E	Mechatronics Systems	14	IT-204-E	Multimedia Technologies

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 sufficient faculty strength.**

3. **Assessment of Practical Training-II, undergone at the end of VI 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.**

M.D.UNIVERSITY, ROHTAK
Scheme of studies & Examination
Bachelor of Engineering (Information Technology)
SEMESTER VIII
Modified 'E' Scheme effective from 2006-07

Sl. No	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Total	Marks of Class work	Theory	Practical	Total	
1	CSE-402 E	Distributed Operating System (CSE,IT)	3	1	-	4	50	100	-	150	3
2	CSE-404 E	Advance Java (CSE, IT)	3	1	-	4	50	100	-	150	3
3		DEPT. ELECTIVES I	4	-	-	4	50	100	-	150	3
4		DEPT. ELECTIVES II	4	-	-	4	50	100	-	150	3
5	CSE-406 E	Advance Java Lab. (CSE, IT)	-	-	3	3	50	-	50	100	3
6	IT-409 E	Project	-	-	8	8	50	-	100	150	3
7	IT-402 E	Independent Study Seminar	-	-	4	4	50	-	-	50	
8	*GFIT-402 E	General Fitness for the Profession	-	-	-	-	50	-	100	150	3
		TOTAL	**14**	**2**	**15**	**31**	**400**	**400**	**250**	**1050**	

DEPT. ELECTIVE – I
1. IT-465-E   Network Technology
2. IT-466-E   Embedded System Design
3. IT-472-E   Introduction to VLSI Design

DEPT. ELECTIVE – II
1. IT-467-E   Computer Software Testing
2. IT-470-E   Web Engineering
4. IT-468-E   Logic and Functional programming

Note:

1) **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.**
2) **For the subject IT-402-E (Independent Study Seminar), a student will select a topic from emerging areas of Information & Technology and study it thoroughly and independently. Later he will give a seminar talk on the topic.**
3) **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.**
4) **Students will be allowed to use the non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination**
5) ***The subject GFIT-404-E (General Fitness for the Profession) code has been changed to GFIT-402-E and will be effective from 2006-07.**

CSE-404-E

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

UNIT 1: CORE JAVA

Introduction to Java, Data types, variables, operators, Arrays, Control Statements, Classes & Methods, Inheritance, Exception Handling, Multithreading, Collections, I/O streams, AVVT & Apolet Programming.

UNIT 2: NETWORKING

Connecting to a Server, Implementing Servers, Sending E-Mail, Making URL Connections, Advanced Socket Programming

UNIT 3: DATABASE NETWORKING

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

UNIT 4: DISTRIBUTED OBJECTS
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

UNIT 5: SWING
Lists, Trees, Tables, Styled Text Components, Progress Indicators, Component Organizers

UNIT 6: 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

UNIT 7: JAVABEANS COMPONENTS
Beans, The Bean-Writing Process, Using Beans to Build an Application, Naming Patterns for Bean Components and Events Bean Property Tubes Beaninfo Classes Property Editors Cuatomizes

UNIT 8: SECURITY
Class Loaders, Bytecode Verification, Security Managers and Permissions, Digital Signatures, Code Signing, Encryption

TEXT BOOK:
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**

Note: Eight questions are to be set – at lease one from each unit Students have to attempt any five.

CSE- 216 E   Database Management Systems Lab

L   T   P   Class Work: 25
–   –   2   Exam: 25
                                                 Total: 50
                                                 Duration of Exam: 3 Hrs.

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

       1. Add a record in the database
       2. Delete a record in the database
       3. Modify the record in the database
       4. Generate queries
       5. Generate the report
       6. List all the records of database in ascending order.

II   Develop a menu driven project for management of database system:

       1. Library information system
               (a) Engineering
               (b) MCA

       2. Inventory control system
               (c) Computer Lab
               (d) College Store

       3. Student information system
               (e) Academic
               (f) Finance

       4. Time table development system
               (g) CSE, IT & MCA Departments
               (h) 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.

MATH-201-E   **MATHEMATICS-III**
                                        (COMMON FOR ALL BRANCHES)

L T P   Class Work   :   50 Marks
3 2 -   Exam.   :   100 Marks
                                               Total   :   150 Marks
                                               Duration of exam.   :   3 Hours

Part-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.

Part-B

Functions of Complex Variable: Definition, Exponential function, Trignometric and Hyperbolic functions, Logrithmic functions. Limit and Continuity of a function, Differnetiability 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.

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).

Part-C

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.

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.   Advanced Engg. Mathematics : F Kreyszig.
2.   Higher Engg. Mathematics : B.S. Grewal.

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

Note: Examiner will set eight questions, taking two from Part-A, three from Part-B and three from Part-C. Students will be required to attempt five question taking atleast one from each part.

CSE-201 E **DATA STRUCTURES & ALGORITHMS**

L	T	P
3	1	-

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

Unit-1: Introduction to Data Structures: Definition of data structures and abstract data types, Static and Dynamic implementations, Examples and real life applications; The Stacks : Definition, Array based implementation of stacks, Linked List based implementation of stacks, Examples : Infix, postfix, prefix representation, Conversions, Applications.

Unit-2: Queues and Lists: Definition, Array based implementation of Queues / Lists, Linked List implementation of Queues / Lists, Circular implementation of Queues and Singly linked Lists, Straight / circular implementation of doubly linked Queues / Lists, Priority Queues, Applications.

Unit-3: Trees: Definition of trees and Binary trees, Properties of Binary trees and Implementation, Binary Traversal pre-order, post order, In- order traversal, Binary Search Trees, Implementations, Threaded trees, Balanced multi way search trees, AVL Trees, Implementations

Unit-4: Graphs: Definition of Undirected and Directed Graphs and Networks, The Array based implementation of graphs, Adjacency matrix, path matrix implementation, The Linked List representation of graphs, Shortest path Algorithm, Graph Traversal – Breadth first Traversal, Depth first Traversal, Tables : Definition, Hash function, Implementations and Applications.

Unit-5: Running time: Time Complexity, Big – Oh - notation, Running Times, Best Case, Worst Case, Average Case, Factors depends on running time, Introduction to Recursion, Divide and Conquer Algorithm, Evaluating time Complexity.

Unit-6: Sorting Algorithms : Introduction, Sorting by exchange, selection, insertions : Bubble sort, Straight selection sort, Efficiency of above algorithms,; Shell sort, Performance of shell sort, Merge sort, Merging of sorted arrays& Algorithms; Quick sort Algorithm analysis,

Heap sort: Heap Construction, Heap sort, bottom – up, Top – down Heap sort approach;

Searching Algorithms: Straight Sequential Search, Binary Search (recursive & non–recursive Algorithms)

Text Book:

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

Reference Books:

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

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

CSE-203 E   **DISCRETE STRUCTURES**

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

Unit-1: Set Theory: 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

Unit-2: Propositional Calculus: Basic operations: AND($\wedge$), OR(v), NOT(~), Truth value of a compound statement, propositions, tautologies, contradictions.

Unit–3: Techniques Of Counting: Permutations with and without repetition, Combination.

Unit-4: Recursion And Recurrence Relation : 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.

Unit-5: Algebric Structures Definition and examples of a monoid, Semigroup, Groups and rings, Homomorphism, Isomorphism and Automorphism, Subgroups and Normal subgroups, Cyclic groups, Integral domain and fields, Cosets, Lagrange's theorem

Unit-6: Graphs And Trees: Introduction to graphs, Directed and Undirected graphs, Homomorphic and Isomorphic graphs, Subgraphs, Cut points and Bridges, Multigraph and Weighted graph, Paths and circuits, Shortest path in weighted graphs, 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.

9. **Note:** Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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

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

Unit-1: 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.

Unit-2: Data Transmission System: Physical connections: modulation, amplitude-, frequency-, phase- modulation; Data encoding: binary encoding (NRZ), Manchester encoding, differential Manchester encoding.
Transmission Media: Twisted pair-, co-axial-, fiber optic-cables, wireless media Transmission impairments: attenuation, limited bandwidth of the channels, delay distortion, noise, data rate of the channels (Nyquist theorem, Shannon limit). Physical layer interfaces: RS 232, X.21

Unit-3: 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

Unit-4: Security in data communications: Transmission errors: feedback-, forward-error control approaches; Error detection; Parity check, block sum check, frame check sequences; Error correction: hamming codes, cyclic redundancy check; Data encryption: secret key cryptography, public key cryptograph; Data compression: run length encoding, Huffman encoding.
Text Book:
1.   Data Communications, Computer Networks and Open Systems Halsall Fred, (4th editon) 2000, Addison Wesley, Low Price edition
Reference Books:
1.   Business Data Communications, Fitzgerald Jerry, 7th Ed. New York, 2001, JW&S,
2.   Communication Systems, 4th Edi, by A. Bruce Carlson, Paul B. Crilly, Janet C. Rutledge, 2002, TMH.
3.   Data Communications, Computer Networks and Open Systems, Halsall Fred, 1996, AW.
4.   Digital Communications, J.G. Proakiss, 4th Ed., MGH
5.   Satellite Communication, Pratt, John Wiley
6.   Data & Computer Communications, W.Stallings PHI
7.   Digital & Data Communication systems, Roden 1992, PHI,
8.   Introduction to Digital & Data Communications, Miller Jaico Pub.
9.   Data Communications and Networking, Behrouz A. Forouzan, 2003, 2nd Edition, T.M.H

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

EE-204-E   **DIGITAL ELECTRONICS**

L T P   CLASS WORK   :   50
3 1 0   EXAM   :   100
                                  T   OTAL   :   150
                                           DURATION OF EXAM :   3 HRS

UNIT 1 FUNDAMENTALS OF DIGITAL TECHNIQUES :
Digital signal, logic gates: AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR, Boolean algebra. Review of Number systems. Binary codes: BCD, Excess-3, Gray,   EBCDIC, ASCII, Error detection and correction codes.

UNIT 2 COMBINATIONAL DESIGN USING GATES:
Design using gates, Karnaugh map and Quine Mcluskey methods of simplification.

UNIT 3 COMBINATIONAL DESIGN USING MSI DEVICES
Multiplexers and Demultiplexers and their use as logic elements, Decoders, Adders / Subtractors, BCD arithmetic circuits, Encoders, Decoders / Drivers for   display   devices.

UNIT 4 SEQUENTIAL CIRCUITS:
Flip Flops : S-R, J-K, T, D, master-slave, edge triggered, shift registers, sequence generators, Counters, Asynchronous and Synchronous Ring counters and Johnson Counter, Design of Synchronous and Asynchronous sequential circuits.

UNIT 5 DIGITAL LOGIC FAMILIES:
Switching mode operation of p-n junction, bipolar and MOS. devices. Bipolar logic families:RTL, DTL, DCTL, HTL, TTL, ECL, MOS, and CMOS logic families. Tristate logic, Interfacing of CMOS and TTL families.

UNIT 6 A/D AND D/A CONVERTERS:
Sample and hold circuit, weighted resistor and R -2 R ladder D/A Converters, specifications for
D/A converters. A/D converters : Quantization, parallel -comparator, successive approximation, counting type, dual-slope ADC, specifications of ADCs.

UNIT 7 PROGRAMMABLE LOGIC DEVICES:
ROM, PLA, PAL, FPGA and CPLDs.

TEXT BOOK :
1.   Modern Digital Electronics(Edition III) : R. P. Jain; TMH

REFERENCE BOOKS :
1.   Digital Integrated Electronics : Taub & Schilling; MGH
2.   Digital Principles and Applications : Malvino & Leach; McGraw Hill.
3.   Digital Design : Morris Mano; PHI.

NOTE : Eight questions are to be set in all by the examiner taking at least one question from each unit. Students will be required to attempt five questions in all.

HUM-201-E   **ECONOMICS**
(COMMON FOR ALL BRANCHES)

L	T	P			
3	1	-			

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

COURSE OBJECTIVE : The purpose of this course is to :
1.   Acquaint the student in the basic economic concepts and their operational significance and
2 .   Stimulate him to think systematically and objectively about contemporary economic problems.

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

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

UNIT-III: 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.

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

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.

UNIT-V: Meaning of Market, Types of Market - Perfect Competition, Monopoly, Oligoply, Monoplistic Competition (Main features of these markets)

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

UNIT-VI: 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**.**

Books Recommended :

TEXT BOOKS:

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

REFERENCE BOOKS:

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

NOTE: Eight questions are to be set atleast one question from each unit and the students will have to attempt five questions in all.

IT-201 E   **PC Lab.**

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

PC Software: Application of basics of MS Word 2000, MS Excel 2000, MS Power Point 2000, MS Access 2000.
1.   To prepare the Your Bio Data using MS Word
2.   To prepare the list of marks obtained by students in different subjects and show with the help of chart/graph the average, min and max marks in each subject.
3.   Preapare a presentation explaining the facilities/infrastructure available in your college/institute.
4.   Create a database of books in the library on a mini scale w.r.t. Computers and manipulate the database using different forms and reports.

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

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

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

CSE-205 E   **DATA STRUCTURES & ALGORITHMS LAB.**

L   T   P   Class Work: 50
-       -   2   Exam: 50
                                                                 Total: 100
                                                                 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-E   **DIGITAL ELECTRONICS LAB**

L T P   CLASS WORK   :   25
0 0 2   EXAM   :   25
                                                 TOTAL   :   50
                                                 DURATION OF EXAM   :   3 HRS

LIST OF EXPERIMENTS:

1.   Study of TTL gates – AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR.

2.   Design & realize a given function using K-maps and verify its performance.

3.   To verify the operation of multiplexer & Demultiplexer.

4.   To verify the operation of comparator.

5.   To verify the truth tables of S-R, J-K, T & D type flip flops.

6.   To verify the operation of bi-directional shift register.

7.   To design & verify the operation of 3-bit synchronous counter.

8.   To design and verify the operation of synchronous UP/DOWN decade counter using J K flip-flops & drive a seven-segment display using the same.

9.   To design and verify the operation of asynchronous UP/DOWN decade counter using J K flip-flops & drive a   seven-segment display using the same.

10.   To design & realize a sequence generator for a given sequence using J-K flip-flops.

11.   Study of CMOS NAND & NOR gates and interfacing between TTL and CMOS gates.

12.   Design a 4-bit shift-register and verify its operation . Verify the operation of a ring counter and a Johnson counter.

NOTE : At least ten experiments are to be performed, atleast 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.

CSE-202 E   **DATABASE MANAGEMENT SYSTEMS**

L	T	P
3	1	-

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

Unit–1: Introduction 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,

Unit-2: Introduction to Client/Server architecture, Three levels architecture of Database Systems, E-R Diagram (Entity Relationship), mapping Constraints, Keys, Reduction of E-R diagram into tables.

Unit-3: File Organisation: Sequential Files, index sequential files, direct files, Hashing, B-trees Index files.

Unit-4: Relational Model, Relational Algebra & various operations, Relational and Tuple calculus.

Unit-5: 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)

Unit-6: Introduction to Distributed Data processing, parallel Databases, data mining & data warehousing, network model & hierarchical model, Introduction to Concurrency control and Recovery systems.

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

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

CSE-204 E   **PROGRAMMING LANGUAGES**

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

Unit-1: 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.

Unit-2: Structured data objects : 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.

Unit-3 : Subprograms and Programmer Defined Data Types: Evolution of data type concept ,abstraction, encapsulation & information hiding , Subprograms ,type definitions, abstract data types.

Unit–4: Sequence 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 .

Unit-5: Data Control: Names & referencing environment, static & dynamic scope, block structure, Local data & local referencing environment, Shared data: dynamic & static scope. Parameter & parameter transmission schemes.

Unit-6: Storage Management: 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.

Unit-7: Programming Languages: Introduction to procedural, non-procedural ,structured, functional and object oriented programming language, Comparison of C & C++ programming languages.

Text Book:
1.   **P**rogramming languages Design & implementation by T.W. .Pratt, 1996, Prentice Hall Pub.
2.   Programming Languages – Principles and Paradigms by Allen Tucker & Robert Noonan, 2002, TMH,
Reference Books:
1.   Fundamentals of Programming languages by Ellis Horowitz, 1984, Galgotia publications (Springer Verlag),
2.   Programming languages concepts by C. Ghezzi, 1989, Wiley Publications.,
3.   Programming Languages – Principles and Pradigms Allen Tucker , Robert Noonan 2002, T.M.H.

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

CSE-208 E   **INTERNET FUNDAMENTALS**

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

Unit-1:   Electronic Mail: 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.

Unit-2 : The Internet: 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.

Unit-3 : 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.

Unit-4: Languages: Basic and advanced HTML, java script language, Client and Server Side Programming in java script. Forms and data in java script, XML basics.

Unit-5 : Servers : Introduction to Web Servers: PWS, IIS, Apache; Microsoft Personal Web Server. Accessing & using these servers.

Unit-6:   Privacy and security topics: Introduction, Software Complexity, Encryption schemes, Secure Web document, Digital Signatures, Firewalls.

Text Book:
1.   Fundamentals of the Internet and the World Wide Web, Raymond Greenlaw and Ellen Hepp – 2001, TMH
2.   Internet & World Wide Programming, Deitel,Deitel & Nieto, 2000, Pearson Education

Reference Books:
1.   Complete idiots guide to java script,. Aron Weiss, QUE, 1997
2.   Network firewalls, Kironjeet syan   -New Rider Pub.
3.   www.secinf.com
4.   www.hackers.com
5.   Alfred Glkossbrenner-Internet 101 Computing MGH, 1996

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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

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

Unit–1: Introduction to C++, C++ Standard Library, Basics of a Typical C++ Environment, Pre-processors Directives, Illustrative Simple C++ Programs. Header Files and Namespaces, library files.

Unit-2: Object Oriented Concepts : 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.

Unit–3: 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.

Unit-4: Operator Overloading: Introduction, Fundamentals of Operator Overloading, Restrictions On Operators Overloading, Operator Functions as Class Members vs. as Friend Functions, Overloading, <<, >> Overloading Unary Operators, Overloading Binary Operators.

Unit-5: Inheritance: Introduction, 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.

Unit–6: **Virtual Functions and Polymorphism:** Introduction to Virtual Functions, Abstract Base Classes And Concrete Classes, Polymorphism, New Classes And Dynamic Binding, Virtual Destructors, Polymorphism, Dynamic Binding.

Unit-7: Files and I/O Streams: 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.

Unit-8: Templates & Exception Handling: 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:
1. C++ How to Program by H M Deitel and P J Deitel, 1998, Prentice Hall
2. Object Oriented Programming in Turbo C++   by Robert Lafore ,1994, The WAITE Group Press.
3. Programming with C++ By D Ravichandran, 2003, T.M.H
Reference books:
1. Object oriented Programming with C++ by E Balagurusamy, 2001, Tata McGraw-Hill
2. Computing Concepts with C++ Essentials by Horstmann, 2003, John Wiley,
3. The Complete Reference in C++ By Herbert Schildt, 2002, TMH.
Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will
  be required to attempt five questions in all.

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

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

Unit-1: Basic Principles: Boolean algebra and Logic gates, Combinational logic blocks(Adders, Multiplexers, Encoders, de-coder), Sequential logic blocks(Latches, Flip-Flops, Registers, Counters)

Unit-2: General System Architecture: 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.

Unit-3: 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.

Unit-4: Basic non pipelined CPU Architecture: 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.

Unit-5: Memory Hierarchy & I/O Techniques: 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.

Unit-6: Introduction to Parallelism: 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).

Unit-7: Computer Organization [80x86]: 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.

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

IT-204 E   **MULTIMEDIA TECHNOLOGIES**

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

Unit-1:   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.

Unit-2: 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.

Unit-3: 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.

Unit-4: 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.

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

CSE- 216 E   **DATABASE MANAGEMENT SYSTEMS LAB**

L   T   P   Class Work: 25
-       -   2   Exam: 25
                                                            Total: 50
                                                            Duration of Exam: 3 Hrs.

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

   1.   Add a record in the database
   2.   Delete a record in the database
   3.   Modify the record in the database
   4.   Generate queries
   5.   Generate the report
   6.   List all the records of database in ascending order.

II   Develop a menu driven project for management of database system:

   1.   Library information system
            (a)   Engineering
            (b)   MCA

   2.   Inventory control system
            (c)   Computer Lab
            (d)   College Store

   3.   Student information system
            (e)   Academic
            (f)   Finance

   4.   Time table development system
            (g)   CSE, IT & MCA Departments
            (h)   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-206 E   **C ++ Programming Lab.**

L	T	P
-	-	2

Class Work: 25
Exam: 25
Total: 50
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

Q 3.   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, 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

Q 5.   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 for the class 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.

Q 6.   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.

Q 7.   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.

Q 8.   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).

Q 10.   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 ritten 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.

Q 14.   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

IT-208 E   **Multimedia Technologies Lab.**

L	T	P
-	-	2

Class Work: 25
Exam: 25
Total: 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 E **Internet Lab.**

L   T   P   Class Work: 25
-       -   2   Exam: 25
                                                          Total: 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 exercises to be given by the teacher concerned.**

IT-301 E   **RAPID APPLICATION DEVELOPMENT**

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

Unit-1:   Visual Programming Environment: Concept of procedure and event oriented languages, Integrated Development Environment for VC++ and Visual Basic, Components of Visual C++ and Visual Basic.

Unit-2: **Parts of Visual C++ Program:** Application object, main window object, view object, document object, Document-View architecture and its advantages, dEvent oriented windows Programming, device context, Microsoft Foundation Classes- an Overview, Simple MFC application, API's .

Unit-3:   Reading keystrokes, handling mouse, creating menus, toolbars, buttons, status bar prompts, dialog box, check box, radio buttons, list boxes, combo boxes, sliders, multiple documents.

Unit-4: Serialization, file handling, debugging.

Unit-5:   DLL's, OLE Object Technologies, Creating Internet Programs using Visual C++ and Visual Basic, Creating Active X Controls, connecting to Database (using DAO/ ADO/ RDO) using Visual Basic and Visual C++.

Text Books

1.   Microsoft Visual C++ By Steven Holzner (Pub: BPB)
2.   Visual C++ Programming, 2nd edition by Steven Holzner(Pub: PHI)
3.   Using Visual Basic for Applications By Paul Sanna(Pub: PHI)
4.   Visual Basic Programming By Steven Holzner
5.   MSDN Help

Reference Books

1.   Visual C++: From the ground Up By Mucller (Pub :TMH)

2.   Programming Visual C++ by David J. Kruglinski

IT-303 E   Systems Programming &System Administration

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

Unit-1: Evolution of Components Systems Programming, Assemblers, Loaders, Linkers, Macros, Compilers. software tools, Text editors, Interpreters and program generators, Debug Monitors, Programming environment.

Unit-2: 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.

Unit-3: Macro language and macro-processor, macro instructions, features of macro facility, macro instruction arguments, conditional macro expansion, macro calls with macro instruction defining macros.

Unit-4: 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.

Unit-5: 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.

Unit-6: 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.

Unit-7: Shell Programming: Programming in the Borne and C-Shell; Wild cards; Simple shell programs; Shell variables; Shell programming constructs; interactive shell scripts; Advanced features.

Unit-8: 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

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

IT-305 E   **COMPUTER NETWORKS**

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

Unit-1: 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

Unit–2: 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.

Unit-3: 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.

Unit–4:   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.

Unit-5: 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 Book:
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,
2.   2000, Addison Wesley, Low Price Edition.
3.   Business Data Communications, Fitzgerald Jerry,.
4.   Computer Networks – A System Approach, Larry L. Peterson & Bruce S. Davie, 2nd Edition
5.   Computer Networking – ED Tittel , 2002, T.M.H.

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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

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

Unit-1: Introduction: 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.

Unit–2: 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.

Unit–3: 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.

Unit–4: 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.

Unit–5: Process-Synchronization & Deadlocks: Critical Section Problems, semaphores; methods for handling deadlocks-deadlock prevention, avoidance & detection; deadlock recovery.

Unit-6: I/O Systems: I/O Hardware, Application I/O Interface, Kernel, Transforming I/O requests, Performance Issues.

Unit–7: 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, T.M.H

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

EE-309-E   **MICROPROCESSORS AND INTERFACING**

L T P		CLASS WORK	:	
	50			
3 1 0		EXAM	:	100
		TOTAL	:	
	150			
		DURATION OF EXAM	:	
	3 HRS			

PART A

UNIT1. THE 8085 PROCESSOR :
Introduction to microprocessor, 8085 microprocessor: Architecture, instruction set, interrupt structure, and assembly language programming.

UNIT2. 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.

UNIT3. 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.

PART B

UNIT4. INTERFACING DEVICE :
The 8255 PPI chip: Architecture, control words, modes and examples.

UNIT 5. DMA :
Introduction to DMA process, 8237 DMA controller,

UNIT6. 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

NOTE: 8 questions are to be set selecting FIVE questions from PART A and THREE questions from PART- B .Students have to attempt any five questions.

CSE -303 E **COMPUTER GRAPHICS**

L	T	P
3	1	-

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

Unit-1: 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.

Unit-2: 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.

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

Unit-4: Hidden surface removal: Introduction to hidden surface removal. The Z- buffer algorithm, scanline algorithm, area sub-division algorithm.

Unit-5: Representing Curves and Surfaces: Parametric representation of curves: Bezier curves, B-Spline curves. Parametric representation of surfaces; Interpolation method.

Unit-6: 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

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

IT-307 E   **Rapid Application Development Lab.**

L   T   P   Class Work: 25
-       -   2   Exam: 25
                                                               Total: 50
                                                               Duration of Exam: 3 Hrs.

Note: At least 10 experiments are to be performed by the students in the semester

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

2.   Get familiar with the essential classes in a typical (document view architecture) VC program and their relationships with each other.

3.   Write a program to handle the mouse event right click on client area and display a message box as "Right Button Click".

4.   Create a simple model dialog box to read the information about a student i.e. name, roll no. class using appropriate fields.

5.   Write a simple console application to create archive class object from file class that reads and stores a simple structure (record).

6.   Create a simple database in MS access and connect it to Visual Basic using ADO or DAO.

7.   Write a program that reads a text and changes its font, font size as selected by the user from different fonts contained in a list box.

8.   With the help of Visual Basic, created an object of excel application and implement any function of it.

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

10.   Make an active X control of your own using Visual Basic.

CSE-309 E　　　　　　　　**Computer Graphics Lab.**

L　　　T　　　P　　　　　　　　　　　　　　　　　　Class Work:　　50
-　　　-　　　3　　　　　　　　　　　　　　　　　　Exam:　50
　　　　　　　　　　　　　　　　　　　　　　　　　Total:　　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-313 E   **Operating Systems Lab.**

L	T	P		Class Work: 25
-	-	2		Exam: 25
				Total: 50
				Duration of Exam: 3 Hrs.

- Study of WINDOWS 2000 Operating System.

- Administration of WINDOWS 2000 (including DNS,LDAP, Directory Services)

- Study of LINUX Operating System (Linux kernel, shell, basic commands pipe & filter commands).

- Administration of LINUX Operating System.

- Writing of Shell Scripts (Shell programming).

- AWK programming.

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

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

L T P   CLASS WORK   :   25
0   0 2   EXAM   :   25
                                      TOTAL   :   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. 16-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-C.

IT-302 E   **Network Programming**

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

Unit-1: Introduction to networking, TC/IP Protocol architecture, Classful internet addresses, subnets, super netting, address resolution Protocol (RAP) and RARP, IP datagram format, UDP and TCP/data grams , ICMP its purpose , FINGER, NET STAT details & IPconfig, Ping, TRACERT, ROUTE.

Unit-2: Socket introduction, elementary TCP sockets, TCP client sever, I/O functions, select& poll functions, socket options elementary UDP sockets, elementary node and address conversions, echo service (TCP and UDP).

Unit-3: Algorithm and issues in server software design :iterative connectionless servers, (UDP), Iterative, connection oriented servers (TCP), single process, concurrent servers multiprotocol servers (TCP,UDP), multi service servers (TCP,UDP).

Unit-4: Remote procedure call concept (RCP) :RPC models, analogy between RPC of client and server, remote programs and procedures, their multiple versions and mutual exclusion communication semantics, RPC retransmits, dynamic port mapping ,authentication.

Unit-5: **N**etwork file system concept of data link access, debugging techniques ,Routing sockets, broadcasting to mobile network.

Text Books:
1.   Unix Network programming Vol -2nd edition, W.Richard Stevens
2.   Internet working with TCP/IP Vol-1, Doubles e-commer.
3.   Internetworking TCP/IP Vol III Doubles E comer, David L.Stevens

Reference Book:
1.   Internetworking with TCP/IP, Vol II

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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

L	T	P
3	1	-

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

Unit-1: Introduction: The process, software products, emergence of software engineering, evolving role of software, software life cycle models, Software Characteristics, Applications, Software crisis.

Unit-2 : 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.

Unit-3 : 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.

Unit-4: 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 a software architecture; Transform flow, Transaction flow; Transform mapping: Refining the architectural design.

Unit-5 : 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.

Unit-6 : 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.

Unit-7: 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 sommerville, 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
5.   JW&S,
6.   An Integrated Approach to software engineering by Pankaj jalote , 1991 Narosa,

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

CSE-304 E   **INTELLIGENT SYSTEMS**

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

Unit-1: 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.

Unit-2: Knowledge representation issues, predicate logic- logic programming, semantic nets- frames and inheritance, constraint propagation, representing knowledge using rules, rules based deduction systems.

Unit-3: 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.

Unit-4: 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.

Unit-5: 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.,

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

CSE- 307 E   **Web Development**

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

Unit-1: Introduction to the Internet, The world wide web: The idea of hypertext and hyper media; How the web works-HTTP, HTML and URLs; How the browser works-MIME types, plugins and helper applications; The standards-HTML, XML, XHTML and the W3C.

Hypertext markup language: The anatomy of an HTML document; Marking up for structure and style: basic page markup, absolute and relative links, ordered and unordered lists, embedding images and controlling appearance, table creation and use, frames, nesting and targeting.
Descriptive markup: Meta tags for common tasks, semantic tags for aiding search, the doubling code and RDF.

Unit-2: Separating style from structure with style sheets: Internal style specifications within HTML, External linked style specification using CSS, page and site design considerations.

Client side programming: Introduction to the JavaScript syntax, the JavaScript object model, Event handling, Output in JavaScript, Forms handling, miscellaneous topics such as cookies, hidden fields, and images; Applications.

Unit-3: Server side programming: Introduction to Server Side Technologies CGI/ASP/JSP., Programming languages for server Side Scripting, Configuring the server to support CGI, applications; Input/ output operations on the WWW, Forms processing, (using PERL/VBSCRIPT/JavaSCIPT)

Unit-4: Other dynamic content technologies: introduction to ASP & JSP, Delivering multimedia over web pages, The VRML idea, The Java phenomenon-applets and servelets, issues and web development.

Unit-5: Introduction to Microsoft .NET Technology and its comparison with the competing Technologies.
 Text books:
1.   Beginning XHTML by Frank Boumpery, Cassandra Greer, Dave Raggett, Jenny Raggett, Sebastian Schnitzenbaumer & ted Wugofski, 2000, WROX press (Indian Shroff Publ. SPD) 1st edition
2.   HTML & XHTML: The Definitive Guide by Chuck Musciano, Bill Kennedy, 2000, 4th Edi.
Reference books:
1.   XHTML Black Book by Steven Holzner, 2000
2.   CGI Programming on the World Wide Web. O'Reilly Associates.
3.   Web Technologies By Achyut S Godbole , Atul Kahate, 2003, T.M.H
4.   Scott Guelich, Shishir Gundararam, Gunther Birzniek; CGI Programing with Perl 2/e O'Reilly.
5.   Doug Tidwell, James Snell, Pavel Kulchenko; Programming Web services, O'Reilly.
6.   Intranets by James D.Cimino, 1997, Jaico Publ.
7.   Internet and Web Technologies – Raj Kamal, 2002, T.M.H

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

EE-402-E   **WIRELESS COMMUNICATION**

L T P	CLASS WORK	:	50
3 1 0	EXAM	:	100
	TOTAL	:	150
	DURATION OF EXAM:		3 HRS

UNIT 1. 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.

UNIT 2. 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.

UNIT 3. INTRODUCTION TO CELLULAR MOBILE SYSTEMS:

Spectrum Allocation, basic Cellular Systems, performance Criteria, Operation of cellular systems, analog cellular systems, digital Cellular Systems.

UNIT 4. ELLULAR SYSTEM DESIGN FUNDAMENTALS:

Frequency Reuse, channel assignment strategies, handoff Strategies, Interference and system capacity, tracking and grade off service, improving coverage and capacity.

UNIT 5. 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.

UNIT 6. 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.

UNIT 7. 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
NOTE: Eight questions are to be set -one question from each unit. Students have to attempt any five question.

EE-407-E   DIGITAL SIGNAL PROCESSING

L T P   CLASS WORK   :   50
3 1 0   EXAM   :   100
                                               TOTAL   :   150
                                               DURATION OF EXAM: 3 HRS

UNIT1.DISCRETE-TIME SIGNALS:
Signal classifications, frequency domain representation, time domain representation, representation of sequences by Fourier transform, properties of Fourier transform, discrete time random signals, energy and power theorems.

UNIT2.DISCRETE-TIME SYSTEMS :
Classification, properties, time invariant system, finite impulse Response (FIR) system, infinite impulse response (IIR) system.

UNIT3.SAMPLING OF TIME SIGNALS:
Sampling theorem, application, frequency domain representation of sampling, reconstruction of band limited signal from its samples. discrete time processing of continuous time signals, changing the sampling rate using discrete time processing.

UNIT4. Z-TRANSFORM :
Introduction, properties of the region of convergence, properties of the Z-transform, inversion of the Z-transform, applications of Z-transform.

UNIT5.BASICS OF DIGITAL FILTERS :
Fundamentals of digital filtering, various types of digital filters, design techniques of digital filters : window technique for FIR, bi-linear transformation and backward difference methods for IIR filter design, analysis of finite word length effects in DSP, DSP algorithm implementation consideration. Applications of DSP.

UNIT6. MULTIRATE DIGITAL SIGNAL PROCESSING:
Introduction to multirate digital signal processing, sampling rate conversion, filter structures, multistage decimator and interpolators, digital filter banks.

TEXT BOOKS :
1.   Digital Signal Processing : Proakis and Manolakis; PHI
2.   Digital Signal Processing: Salivahanan, Vallavaraj and Gnanapriya;TMH

REFERENCE BOOKS:
1.   Digital Signal Processing: Alon V. Oppenhelm;PHI
2.   Digital Signal processing(II-Edition): Mitra, TMH

NOTE: Eight questions are to be set - at least one from each unit. Students have to attempt five questions.

IT-304 E   **NETWORK PROGRAMMING LAB.**

L   T   P   Class Work: 25
-       -   2   Exam: 25
                                                                Total: 50
                                                                Duration of Exam: 3 Hrs.

The socket programming can be done on Unix/Linux operating or/and Windows. Socket programming, and the language can be C/VC++ and/or Java

1.   Write a program to Create Sockets For Sending And Receiving Data.
2.   Write a program to Obtain The Local & Remote Socket Address.
3.   Write a program to Create Sockets For Handling Multiple Connection
4.   Write a program to Obtain The Information About The (A) Host (B) Network (C) Protocols (D) Domains
5.   Write a program to Manipulate The IP Address.
6.   Write a program to Write A Telnet Client.
7.   Write a program to Make An FTP Client

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

CSE-306 E   **INTELLIGENT SYSTEM LAB.**

L   T   P   Class Work: 25
-       -   2   Exam: 25
                                                       Total: 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.

CSE-311 E   **Web Development & Core JAVA Lab.**

L	T	P		Class Work:	25
-	-	2		Exam:	25
				Total:	50
				Duration of Exam: 3 Hrs.	

Java programs using classes & objects and various control constructs such as loops etc , and data structures such as arrays , structures and functions.
Java programs for creating Applets for display of Images ,Texts and Animation
Programs related to interfaces & packages
Input output & Random files programs in java
Java programs using Event driven concept
Programs related to Network Programming

Development of Web site for the college or newspaper agency.

Books recommended for Lab.
1.   Java Elements – Principles of Programming in Java , Duane A. Bailey , Duane W. Bailey, 2000, T.M.H
2.   The Java Handbook by Patrick Naughton, TMH, N.Delhi

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

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

Unit-1:   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.

Unit-2: 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.

Unit-3: 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.

Unit-4:   Data mining definition & task, KDD versus data mining, data mining techniques, tools and applications.

Unit-5:   Data mining query languages, data specification, specifying knowledge, hierarchy specification, pattern presentation & visualisation specification, data mining languages and standardisation of data mining.

Unit-6:   Data mining techniques: Association rules, Clustering techniques, Decision tree knowledge discovery through Neural Networks & Genetic Algorithm, Rough Sets, Support Victor Machines and Fuzzy techniques.

Unit-7: Mining complex data objects, Spatial databases, Multimedia databases, Time series and Sequence data; mining Text Databases and mining Word Wide Web.

Text Books:
1.   Data Warehousing In the Real World; Sam Anahory & Dennis Murray; 1997, Pearson
2.   Data Mining- Concepts & Techniques; Jiawei Han & Micheline Kamber- 2001, Morgan Kaufmann.
3.   Data Mining Techniques; Arun Pujar; 2001, University Press; Hyderbad.

Reference Books:

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

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

CSE-403 E   **SOFTWARE PROJECT MANAGEMENT**

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

Unit-1: 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.

Unit-2: 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.

Unit-3: 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.

Unit-4: 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..

Unit-5: 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.

Unit-6: 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, 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..

Unit-7: 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.

Unit-8: 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 edi), 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.
Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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

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

UNIT-1   :   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:

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.

UNIT-2   :   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.

UNIT-3 :   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

UNIT-4 :   Security Planning, Categories of Security: C1, C2, C3, C4, password security, Access Control and Monitoring.

BOOKS RECOMMENDED

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

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

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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

L	T	P
4	-	-

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

Part-A

Unit-1: 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.

Unit-2: Electronic Payment Methods: Updating traditional transactions; Secure online transaction models; Online commercial environments; digital currencies and payment systems; Offline secure processing; private data networks. Security protocols.

Unit-3: 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.

Unit-4:   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.

Part- B

Unit-5: 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.

Unit-6:   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.

Unit-7: ERP - Information System perspective: Introduction to OLAP (Online Analysis and Processing), TP, OAS, KBS, MRP, BPR,. SCM, REP, CRM, Information Communication Technology.

Unit-8: 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:

1.   "Frontiers of electronics Commerce" Ravi lalakota, Andrew Whinston ,1996, Addision Wesley,

2.   Enterprise Resource Planning-Concepts and Practice, V.K. Garg and N.K. Venkita Krishna, 1998, PHI.

Reference Books:

1.   The SAP/3 Handbook, John Antonio, Fernandz, TMH.

2.   "The E-Business Revolution" Denial amor Addision Wesley

3.   "From Edi to E-Commerce: A Business Initiative" Sokol TMH

4.   "E Commerce" Greenstein and Feinman TMH

5.   "E Commerce" Excel, Diwan, Sharma

6.   Asset International "Net Commerce" TMH

7.   "E Commerce: The Cutting Edge of Business" Bajan And Nag TMH

8.   E-Commerces- Jaffrey F. Rayport , Bernard J. Jaworski, 2002, T.M.H

9.   Electronic Commerce – Security , Risk management and Control , Greenstein, Feinman, 2002, T.M.H

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all but at least two from each Part A & Part B.

IT 407-E   **SYSTEM AND NETWORK ADMINISTRATION LAB.**

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

1.   Management of the users & the domain.

2.   Configuring DHCP.

3.   Setting up the local security policy.

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

5.   Use of event viewer.

6.   Use of the performance monitor.

7.   Management of the IIS and FJP server.

8.   Setting up of local area network.

9.   Setting up of router in Window 2000 server.

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

11.   Use of network monitor.

12.   Setting up of a DNS.

13.   Setting up and use "Terminal Clinet Services".

CSE-409 E   **VISUAL PROGRAMMING LAB.**

L   T   P   Class Work: 25
-       -   3   Exam: 50
                                                     Total: 75
                                                     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 CFile 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.

CSE-402 E   **DISTRIBUTED OPERATING SYSTEM**

L	T	P		
3	1	-		

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

Unit-1: Introduction: 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.

Unit-2: 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 .

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.

Distributed Shared Memory: What is shared memory, Consistency models, Page based distributed shared memory, shared variables distributed shared memory.

Unit-5: 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.

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

CSE-404-E   **ADVANCED JAVA**

L T P
3 1 0

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

UNIT 1: CORE JAVA

Introduction to Java, Data types, variables, operators, Arrays, Control Statements, Classes & Methods, Inheritance, Exception Handling, Multithreading, Collections, I/O streams, AVVT & Apolet Programming.

UNIT 2: NETWORKING

Connecting to a Server, Implementing Servers, Sending E-Mail, Making URL Connections, Advanced Socket Programming

UNIT 3: DATABASE NETWORKING

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

UNIT 4: DISTRIBUTED OBJECTS

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

UNIT 5: SWING

Lists, Trees, Tables, Styled Text Components, Progress Indicators, Component Organizers

UNIT 6: 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

UNIT 7: JAVABEANS COMPONENTS

Beans, The Bean-Writing Process, Using Beans to Build an Application, Naming Patterns for Bean Components and Events Bean Property Tubes Beaninfo Classes Property Editors Cuatomizes

UNIT 8: SECURITY

Class Loaders, Bytecode Verification, Security Managers and Permissions, Digital Signatures, Code Signing, Encryption

TEXT BOOK:

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

Note: **Eight questions are to be set – at lease one from each unit Students have to attempt any five.**

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

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

Development of programs relating to :

1.   JDBC

2.   Servlets

3.   Beans

4.   RMI

5.   JSP

IT-465 E   **NETWORK TECHNOLOGY**

L	T	P
4	-	-

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

Unit-1: 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.

Unit-2: Security issues, CGI, PERL, HTML, VRML, JAVA, VB script and other internet development tools, internet networking TCP/IP protocols .) Network Security and Management.

Unit-3: 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.

Unit-4: 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:
1.   Computer Networks by Tanenbaum, 2003, PHI.
2.   Computer Networks by Black, 1995, PHI.

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

IT-466 E   **EMBEDDED SYSTEMS DESIGN**

L   T   P   Class Work: 50
4   -   -   Exam: 100
                                                          Total: 150
                                                          Duration of Exam: 3 Hrs.

Unit-1: Real time operating system overview, exposure to Windows CE, QNX, Micro kernels and μc/OS of introduction to process models. Interrupt routines in an RTOs environment, encapsulating semaphores and queues, hard real-time scheduling considerations, saving memory space.

Unit-2: 16 & 32 bit microprocessor and micro-controller and DSP hardware with reference to Embedded system.

Unit-3: Embedded software development tools and compilers – host and target machines, linker/ locators for embedded software, cross compilers, cross assemblers and tool chairs, gce compiler, basic concept of device drivers, serial communication interface device driver.

Unit-4: System synthesis of Hardware/ software co-emulation, simulation speed of emulators. JTAG OCD

Unit-5: Communication protocols with special reference to embedded system. TCP/IP, VDP wireless protocols, IRDA, Blue tooth IEEE 8.8.11.

Text Books:

1.   An embedded system primer by David E Simon, 1999, Addison-Wesley
2.   Programming for Embedded system by Dreamtech software team, John wiley, 2002

Reference Books:
1.   TCP/IP Lean: Web servers for embedded systems by Jeramy Bentham, 2002
2.   Real –time programming: A guide to 32 bit embedded development, Rick Grehan, 1999, AW.

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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

L	T	P			
4	-	-			

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

Unit-1: Crystal Growth: MGS, EGS, Czochralspi crystal Puller, Silicon shaping, Wafer Preparation. Epitaxy: Vapour Phase Epitaxy, Epitaxial Layer evaluation Molcullar Beam Epitaxy.

Unit-2: Oxidation: Thermal Oxidation Kinetics, Oxidation techniques, Oxide Properties, Oxidation induced Defects. Lithography: Photolithography, e-beam lithography, X ray Lithography.

Unit-3: 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, SiO2, SiO3N4; Plasma assisted Depositions.

Unit-4: 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.

Unit-5: Metallization: Metallization applications, Choices, Physical Vapour Deposition. Sputtcring, Metallization Problems. Assembly & Packaging: Package Types, design considerations, Package fabrication technologies, Future trends.

Unit-6: 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

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

IT-467 E   **COMPUTER SOFTWARE TESTING**

L   T   P   Class Work: 50
4   -   -   Exam: 100
                                                                         Total: 150
                                                                         Duration of Exam: 3 Hrs.

Unit-1: 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.

Unit-2:   Reporting and analyzing bugs: Problem reports, Content and Characteristics of Problem Report, analysis and Tactics for analyzing a reproducible bug. Making a bug reproducible

Unit-3:   Problem Tracking System: Objective of Problem Tracking System, tasks of the system, Problem tracking overview, users of the tracking system, mechanics of the database

Unit-4:   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

Unit-5:   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

Unit-6: **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

Unit-7: 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).

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

IT-470 E   **WEB ENGINEERING**

L   T   P   Class Work: 50
4   -   -   Exam: 100
                                                                 Total: 150
                                                                 Duration of Exam: 3 Hrs.

Unit-1: **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.

Unit-2: **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, 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.

Unit-3:   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.

Unit-4: Overview of advance features of XML

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

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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

L   T   P   Class Work: 50
4   -   -   Exam: 100
                                                                 Total: 150
                                                                 Duration of Exam: 3 Hrs.

Unit-1: Procedural and non-procedural lang., prolog vs LISP, Applications of LISP & PROLOG in designing expert system.

Unit-2: Syntax of PROLOG, Lists, Operators, Arithmetic, Structures, Controlling Back Tracking.

Unit-3: Input and Output, built-in predicates, Operation on Data Structures, Advanced Tree Representation.

Unit-4: Prolog in Artificial Intelligence: writing programs for search techniques, Constraint logic programming, Knowledge representation and expert system, Expert System Shell.

Unit-5: Planning, Machine Learning, Inductive Logic Programming, Qualitative Reasoning, Language Processing, Game Playing, Meta Programming.

Text Book:
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.

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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

L   T   P   Class Work: 50
4   -   -   Exam   :   100
                                                       Total   :   150
                                                       Duration of Exam: 3 Hrs.

Unit-1: Procedural and non-procedural lang., prolog vs LISP, Applications of LISP & PROLOG in designing expert system.

Unit-2: Syntax of PROLOG, Lists, Operators, Arithmetic, Structures, Controlling Back Tracking.

Unit-3: Input and Output, built-in predicates, Operation on Data Structures, Advanced Tree Representation.

Unit-4: Prolog in Artificial Intelligence: writing programs for search techniques, Constraint logic programming, Knowledge representation and expert system, Expert System Shell.

Unit-5: Planning, Machine Learning, Inductive Logic Programming, Qualitative Reasoning, Language Processing, Game Playing, Meta Programming.

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Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

IT-467 E   **COMPUTER SOFTWARE TESTING**

L   T   P   Class Work: 50
4   -   -   Exam: 100
                                                                       Total: 150
                                                                       Duration of Exam: 3 Hrs.

Unit-1: 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.

Unit-2: Reporting and analyzing bugs: Problem reports, Content and Characteristics of Problem Report, analysis and Tactics for analyzing a reproducible bug. Making a bug reproducible

Unit-3: Problem Tracking System: Objective of Problem Tracking System, tasks of the system, Problem tracking overview, users of the tracking system, mechanics of the database

Unit-4: 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

Unit-5: 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

Unit-6: **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

Unit-7: 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

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