M.D UNIVERSITY
SCHEME OF STUDIES AND EXAMINATION
B.TECH. II YEAR (COMPUTER SCIENCE & ENGINEERING)
SEMESTER III
'F' Scheme effective from 2010-11

Sl. No	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Total	Marks of Class works	Theory	Practical	Total	
1	MATH-201-F OR HUM-201-F	Mathematics III Common to (CSE,IT,ME,ECE,BME,EE,EEE,E&I,I&C) OR ENGG. ECONOMICS	3	2	-	5	50	100	-	150	**3**
2	CSE-201 F	Data Structures Using C (CSE,ECE,IT,EI)	3	1	-	4	50	100	-	150	**3**
3	CSE-203 F	Discrete Structures (CSE,IT)	3	1	-	4	50	100	-	150	**3**
4	EE-217 -F	Digital & Analog Communication (CSE,IT)	3	1	-	4	50	100	-	150	**3**
5	EE-204-F	Digital Electronics (Common with 4th Sem. – EE,EL,EI & IC)	3	1	-	4	50	100	-	150	**3**
6	HUM-203 F	Fundamental of Management (Common for all branches)	3	1	-	4	50	100	-	150	**3**
7	IT-201-F	PC Lab (CSE,IT)	-	-	3	3	50	-	50	100	**3**
8	CSE-205-F	Data Structures Using C Lab (CSE,ECE,IT,EI)	-	-	2	2	25	-	25	50	**3**
9	EE-224-F	Digital Electronics Lab (CSE,IT & Common with 4th Sem. – EE,EL,EI & IC)	-	-	3	3	50	-	50	100	**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.**

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

L T P		
3 2 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam	: 3 hr

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

Section-A

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

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

Section-B

Functions of Complex Variable : Definition, Exponential function, 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 fourmula.

Section-C

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

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

Section D

Testing of a hypothesis, tests of significance for large samples, Student's

t-distribution

(applications only), Chi-square test of goodness of fit.

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

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

Course Outcomes

The students will learn:
CO1 - The tool of Fourier series and Fourier Transform for learning advanced Engineering Mathematics.
CO2 - The tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
CO3 - The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.
CO4 - The basic ideas of statistics including various discrete and Continuous probability distributions.
CO5 - The statistical methods of studying data samples.
CO6 - The effective mathematical tools for the solutions of Linear Programming Problem (LPP).

REFERENCE BOOKS :

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

HUM-201-F **ENGINEERING ECONOMICS**

L T P		
3 1 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam	: 3 hr

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

To take an understanding of Indian Economy

Section-A

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

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

Section-B

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

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

Section-C

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

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

Section-D

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

Nature and characteristics of Indian economy (brief and elementary introduction),

Privatization - meaning, merits and demerits. Globalisation of Indian economy - merits and demerits. Elementary Concepts of VAT, WTO, GATT & TRIPS agreement.

COURSE OUTCOMES

Upon successful completion of this course, the student will be able to:

CO1 - explain the basic economic principles of wants, scarcity, choice, opportunity cost, etc as applied to business organizations and engineering firms;

CO2 - understand the role of demand and supply law

CO3 - carry out the cost analysis of a manufactured product;

CO4 - fully understand nature and characteristics of Indian Economy

TEXT BOOKS :

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

REFERENCE BOOKS :

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

CSE-201 F **Data Structures Using 'C'**

(CSE, EL, ECE, IT, ECE)

L T P
3 1

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

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

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

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

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

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

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

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

Section-B Pointers and Linked Lists;

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

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

Section-C Trees and Graphs

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

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

Section-D file Handling and Advanced data Structure

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

COURSE OUTCOMES:

After the completion of the course the student will be able to:

CO1 - Problem solving through computer programming
CO2 - Familiarity of programming environment in Linux operating system
CO3 - Ability to use different memory allocation methods
CO4 - Ability to deal with different input/output methods
CO5 - Ability to use different data structures

Text Book:

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

Data Structures and Algorithms by A.V. Aho, J.E. Hopcroft and T.D. Ullman, Original edition, Addison-Wesley, 1999, Low Priced Edition.

Fundamentals of Data structures by Ellis Horowitz & Sartaj Sahni, Pub, 1983,AW
Fundamentals of computer algorithms by Horowitz Sahni and Rajasekaran.
Data Structures and Program Design in C By Robert Kruse, PHI,
Theory & Problems of Data Structures by Jr. Symour Lipschetz, Schaum's outline by TMH
Introduction to Computers Science -An algorithms approach , Jean Paul Tremblay, Richard B. Bunt, 2002, T.M.H.
Data Structure and the Standard Template library – Willam J. Collins, 2003, T.M.H

CSE-203 F **Discrete Structures**

L	T	P
3	1	-

Class Work:	50
Exam:	100
Total:	150

NOTE: Duration of Exam: 3 Hrs.

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

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

Introduction to propositional Calculus: Basic operations: AND(^), OR(v), NOT(~), Truth value of a compound statement, propositions, tautologies, contradictions.

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

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

Section C: 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

Section D: Section Graphs and Trees:

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

Text Book:
Elements of Discrete Mathematics,C.L Liu, 1985, McGraw Hill

COURSE OUTCOMES:

After the completion of the course the student will be able to:
CO1 - To appreciate the basic principles of Boolean algebra, Logic, Set theory
CO2 - Permutations and combinations and Graph Theory.
CO3 - Be able to construct simple mathematical proofs
CO4 - Be able to understand logical arguments and logical constructs. Have a better understanding of sets, functions, and relations.
CO5 - Acquire ability to describe computer programs in a formal mathematical manner

Reference Books:

Discrete Mathematics by Johnson Bough R., 5th Edition, PEA, 2001..

Concrete Mathematics: A Foundation for Computer Science, Ronald Graham, Donald Knuth and Oren Patashik, 1989, Addison-Wesley.

Mathematical Structures for Computer Science, Judith L. Gersting, 1993, Computer Science Press.

Applied Discrete Structures for Computer Science, Doerr and Levasseur, (Chicago: 1985,SRA

Discrete Mathematics by A. Chtewynd and P. Diggle (Modular Mathematics series), 1995, Edward Arnold, London,

Schaums Outline series: Theory and problems of Probability by S. Lipshutz, 1982, McGraw-Hill Singapore

Discrete Mathematical Structures, B. Kolman and R.C. Busby, 1996, PHI

Discrete Mathematical Structures with Applications to Computers by Tembley & Manohar, 1995, Mc Graw Hill.

EE-217 F **Digital and Analog Communication**
(CSE, IT)

L	T	P
3	1	-

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

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

Section A: Communication system components:

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

Section B: Data Transmission System:

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

Section C: Standards in data communications:

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

Section D: Security in data communications:

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

COURSE OUTCOMES:

After the completion of the course the student will be able to:

CO1 - Understand basic elements of a communication system

CO2 - Conduct analysis of baseband signals in time domain and in frequency domain

CO3 - Demonstrate understanding of various analog and digital modulation and demodulation techniques techniques.
CO4 - Analyse the performance of modulation and demodulation techniques in various transmission environments
CO5 - Appreciate the importance of synchronisation in communication system

Text Book:

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

Reference Books:

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

EE-204-F **DIGITAL ELECTRONICS**

L T P		
3 1 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam	: 3 hr

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

SECTION-A

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

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

SECTION-B

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

SECTION –C

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

SECTION- D

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

COURSE OUTCOMES:

After the completion of the course the student will be able to:

CO1 - Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.

CO2 - To understand and examine the structure of various number systems and its application in digital design.
CO3 - The ability to understand, analyze and design various combinational and sequential circuits.
CO4 - Ability to identify basic requirements for a design application and propose a cost effective solution.
CO5 - To develop skill to build, and troubleshoot digital circuits.

Text Book:

M. Morris Mano and M. D. Ciletti, "Digital Design", 4th Edition, Pearson Education

Pedroni - Digital Electronics & Design, Elsevier
R.P. Jain , "Modern digital electronics" , 3rd edition , 12th reprint TMH Publication, 2007. Digital Design and computer organization: Nasib Singh Gill & J. B. Dixit

REFERENCE BOOKS :

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

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

L T P	Class Work marks	: 50
3 1 0	Theory marks	: 100
	Total marks	: 150
	Duration of Exam :	3 hr

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

Section-A

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

Section-B

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

Section-C

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

Section-D

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

BOOKS RECOMMENDED :

Course outcomes:

Students will be able to understand

CO1 - Evolution of Management and contribution of Management thinkers.

CO2 - importance of staffing and training

CO3 - the concept of material management and inventory control

CO4 - the components of marketing and advertising

CO5 - various sources of finance and capital structure

TEXT BOOKS :

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

REFERENCE BOOKS :

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

IT-201 F **PC Lab.**

L	T	P
-	-	3

Class Work: 50
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.

COURSE OUTCOMES:

After the completion of the course the student will be able to:

CO1 - Know the use of computer hardware and software

CO2 - The Internet, networking and mobile computing.

CO3 - Provide hands-on use of Microsoft Office applications Word, Excel, Access and PowerPoint. Completion of the assignments will result in MS Office applications knowledge and skills.

CO4 - Troubleshooting exercises related to various components of computer like monitor, drives, memory and printers etc.

CO5 - remove, study and replace floppy disk drive, hard disk, CD ROM drive assemble a PC.

Reference Books:

Complete PC upgrade & maintenance guide, Mark Mines, BPB publ.

PC Hardware: The complete reference, Craig Zacker & John Rouske, TMH 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 F **Data Structures using 'C' Lab.**

L	T	P		
-	-	2	Class Work:	25
			Exam:	25
			Total:	50

Duration of Exam: 3 Hrs.

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

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

COURSE OUTCOMES:

After the completion of the course the student will be able to:

CO1 - summarize searching and sorting techniques

CO2 - describe stack, queue and linked list operation, have knowledge of tree and graphs concepts.

CO3 - Know about the basic concepts of Function, Array and Link-list.

CO4 - Understand how several fundamental algorithms work particularly those concerned with Stack, Queues, Trees and various Sorting algorithms.

CO5 - Design new algorithms or modify existing ones for new applications and able to analyze the space & time efficiency of most algorithms

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

L	T	P
0	0	3

Class Work marks : 50
Theory marks : 50
Total marks : 100

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

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

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

COURSE OUTCOMES: After the completion of the course the student will be able to:

CO1 - Understand the design of sequential Circuits such as Flip-Flops, Registers, and Counters.
CO2 - Obtain a basic level of Digital Electronics knowledge.
CO3 - Set the stage to perform the analysis and design of Complex Digital electronic Circuits

M.D UNIVERSITY
SCHEME OF STUDIES AND EXAMINATION
B.TECH. II YEAR (COMPUTER SCIENCE & ENGINEERING)
SEMESTER - IV
'F' Scheme effective from 2010-11

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 F	Data Base Management Systems (CSE,IT)	3	1	-	4	50	100	-	150	**3**
2	CSE-204 F	Programming Languages	3	1	-	4	50	100	-	150	**3**
3	MATH-201-F OR HUM-201-F	Mathematics III Common to (CSE,IT,ME,ECE,BME,EE,EEE,E&I,I&C) OR ENGG. ECONOMICS	3	2	-	5	50	100	-	150	**3**
4	IT-202-F	Object-Oriented Programming using C++ (CSE,IT)	3	1	-	4	50	100	-	150	**3**
5	CSE-208 F	Internet Fundamentals (CSE,IT)	3	1	-	4	50	100	-	150	**3**
6	CSE-210 F	Computer Architecture and Organization (CSE,IT and Common with 5th Sem. EL,EI,IC)	3	1	-	4	50	100	-	150	**3**
7	CSE-212 F	Data Base Management Systems Lab. (CSE,IT)	-	-	3	3	50	-	50	100	**3**
8	IT-206-F	C++ Programming Lab. (CSE,IT)	-	-	2	2	25	-	25	50	**3**
9	CSE-214 F	Internet Lab. (CSE,IT)	-	-	2	2	25	-	25	50	3
10	GP-202 F	General Proficiency	-	-	2	2	50	-	-	50	
		TOTAL	**18**	**6**	**9**	**34**	**450**	**600**	**100**	**1150**	

Note:

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

CSE-202 F **Database Management Systems**

L	T	P
3	1	-

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

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

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

Overview of database Management System; Various views of data, data Models, Introduction to Database Languages. Advantages of DBMS over file processing systems, Responsibility of Database Administrator,

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

Section B: File Organization and Relational Model and Calculus:

Sequential Files, index sequential files, direct files, Hashing, B-trees Index files.

Relational Model, Relational Algebra & various operations, Relational and Tuple calculus.

Section C; Introduction to Query Languages :

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

SECTION D:

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

COURSE OUTCOMES:

After the completion of the course the student will be able to:

CO1 - To understand the basic concepts, applications and architecture of database systems

CO2 - To master the basics of ER diagram, SQL, construct queries using SQL, relational database theory and relational algebra expressions for queries.

CO3 - To understand sound design principles for logical design of databases, normalization and become familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B- tree and hashing.
To understand the basic issues of transaction processing, concurrency control, recovery, parallel and distributed databases

Text Books:

Database System Concepts by A. Silberschatz, H.F. Korth and S. Sudarshan, 3rd edition, 1997, McGraw-Hill, International Edition.
Introduction to Database Management system by Bipin Desai, 1991, Galgotia Pub.

Reference Books:

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

CSE-204 F **Programming Languages**

L	T	P
3	1	-

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

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

Section A: Introduction:

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

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

Structured data objects & data types , specification & implementation of structured data types, Declaration & type checking of data structure ,vector & arrays, records Character strings, variable size data structures , Union, pointer & programmer defined data objects, sets, files.

Evolution of data type concept, abstraction, encapsulation & information hiding, Subprograms, type definitions, abstract data types.

Section C: Sequence Control and Data Control:

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

Section D: Storage Management, Programming languages:

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

COURSE OUTCOMES:

After the completion of the course the student will be able to:
:
CO1 - Independently understand basic concept of programming languages.

CO2 - To be able to computational solutions in several of the main programming idioms.

CO3 - To be able to select an appropriate programming language for solving a computational problem, with justification.

CO4 - To know and understand the principles of programming languages – Abstraction; Syntax and Semantics Values and Names; Expressions; Procedures Sequence and Data Control; Storage Management etc.

Text Book:

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

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

MATH-201-F MATHEMATICS-III

L T P		
3 2 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam:	3 hr

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

Section-A

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

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

Section-B

Functions of Complex Variable : Definition, Exponential function, 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 fourmula.

Section-C

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

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

Section D

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

Linear Programming: Linear programming problems formulation, Solving linear

programming problems using (i) Graphical method (ii) Simplex method (iii) Dual simplex method.

Course Outcomes

The students will learn:

CO1 - The tool of Fourier series and Fourier Transform for learning advanced Engineering Mathematics.
CO2 - The tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
CO3 - The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.
CO4 - The basic ideas of statistics including various discrete and Continuous probability distributions.
CO5 - The statistical methods of studying data samples, the effective mathematical tools for the solutions of Linear Programming Problem (LPP).

TEXT BOOKS :

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

REFERENCE BOOKS :

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

HUM-201-F **ENGINEERING ECONOMICS**

L T P		
3 1 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam :	3 hr

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

Section-A

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

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

Section-B

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

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

Section-C

Various concepts of cost - Fixed cost, variable cost, average cost, marginal cost, money cost, real cost opportunity cost. Shape of average cost, marginal cost, total cost

etc. in short run and long run.

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

Section-D

Supply and Law of Supply, Role of Demand & Supply in Price Determinition and effect of changes in demand and supply on prices. Nature and characteristics of Indian economy (brief and elementary introduction), Privatization - meaning, merits and demerits. Globalisation of Indian economy - merits and demerits. Elementary Concepts of VAT, WTO, GATT & TRIPS agreement.

COURSE OUTCOMES

Upon successful completion of this course, the student will be able to:

CO1 - explain the basic economic principles of wants, scarcity, choice, opportunity cost, etc as applied to business organizations and engineering firms;

CO2 - understand the role of demand and supply law

CO3 - carry out the cost analysis of a manufactured product;

CO4 - fully understand nature and characteristics of Indian Economy

TEXT BOOKS :

Principles of Economics : P.N. Chopra (Kalyani Publishers).

Modern Economic Theory – K.K. Dewett (S.Chand)

REFERENCE BOOKS:

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

IT-202 F **Object Oriented Programming Using C++**

L	T	P
3	1	-

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

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

Section A: Introduction to C++ and Object oriented Concepts

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

Section B: Classes and Data Abstraction:

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

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

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

Dynamic Binding.

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

Files and Streams, Creating a Sequential Access File, Reading Data From A Sequential Access File, Updating Sequential Access Files, Random Access Files, Creating A Random Access File, Writing Data Randomly To a Random Access File, Reading Data Sequentially from a Random Access File. Stream Input/Output Classes and Objects, Stream Output, Stream Input, Unformatted I/O (with read and write), Stream Manipulators, Stream Format States, Stream Error States.
Function Templates, Overloading Template Functions, Class Template, Class Templates and Non-Type Parameters, Templates and Inheritance, Templates and Friends, Templates and Static Members.
Introduction, Basics of C++ Exception Handling: Try Throw, Catch, Throwing an Exception, Catching an Exception, Rethrowing an Exception, Exception specifications, Processing Unexpected Exceptions, Stack Unwinding, Constructors, Destructors and Exception Handling, Exceptions and Inheritance.

COURSE OUTCOMES:

After the completion of the course the student will be able to:
CO1 - Be able to understand the difference between object oriented programming and procedural oriented language and data types in C++.
CO2 - Be able to program using C++ features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.
CO3 - students will able to simulate the problem in the subjects like Operating system, Computer networks and real world problems

Text Books:

Object Oriented Programming in Turbo C++ by Robert Lafore ,1994, The WAITE Group Press.
Programming with C++ By D Ravichandran, 2003, T.M.H

Reference books:

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

CSE-208 F **Internet Fundamentals**

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

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

Section A: Electronic Mail and Internet:

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

Section B: World Wide Web :

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

Section C: Languages:

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

Section D: Privacy and security topics:

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

COURSE OUTCOMES:

After the completion of the course the student will be able to:

CO1 - To understand difference between various web server and learn how to work on them.
CO2 - To understand working of digital signatures and firewalls.
CO3 - To work on forms and data in javascript.
CO4 - To know various encryption schemes

Text Book:

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

Reference Books:

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

CSE- 210 F Computer Architecture & Organization

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

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

Section A:

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

Section B: Instruction Set Architecture:

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

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

CPU Architecture types (accumulator, register, stack, memory/ register) detailed data path of a typical register based CPU, Fetch-Decode-Execute cycle (typically 3 to 5 stage); microinstruction sequencing, implementation of control unit, Enhancing performance with pipelining.

The need for a memory hierarchy (Locality of reference principle, Memory hierarchy in practice: Cache, main memory and secondary memory, Memory parameters: access/ cycle time, cost per bit); Main memory (Semiconductor RAM & ROM organization, memory expansion, Static & dynamic memory types); Cache memory (Associative & direct mapped cache organizations.

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

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

Instruction codes, computer register, computer instructions, timing and control, instruction cycle, type of instructions, memory reference, register reference. I/O reference, Basics of Logic Design, accumulator logic, Control memory, address sequencing, micro-instruction

formats, micro-program sequencer, Stack Organization, Instruction Formats, Types of interrupts; Memory Hierarchy.

COURSE OUTCOMES:

After the completion of the course the student will be able to:

CO1 - Design a circuit for any digital function

CO2 - Use K-map for simplification of Boolean expressions

CO3 - Identify the addressing modes of instructions and calculation of effective address

CO4 - Determine which hardware blocks and control lines are used for different instructions

CO5 - Classify the parallel processors.

Text Books:

Computer Organization and Design, 2nd Ed., by David A. Patterson and John L. Hennessy, Morgan 1997, Kauffmann.

Computer Architecture and Organization, 3rd Edi, by John P. Hayes, 1998, TMH.

Reference Books:

Operating Systems Internals and Design Principles by William Stallings,4th edition, 2001, Prentice-Hall Upper Saddle River, New Jersey

Computer Organization, 5th Edi, by Carl Hamacher, Zvonko Vranesic,2002, Safwat Zaky.

Structured Computer Organisation by A.S. Tanenbaum, 4th edition, Prentice-Hall of India, 1999, Eastern Economic Edition.

Computer Organisation & Architecture: Designing for performance by W. Stallings, 4th edition, 1996, Prentice-Hall International edition.

Computer System Architecture by M. Mano, 2001, Prentice-Hall. Computer Architecture- Nicholas Carter, 2002, T.M.H.

CSE- 212 F **Database Management Systems Lab**

L	T	P		
-	-	3	Class Work:	50
			Exam:	50
			Total:	100
			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 two menu driven project for management of database system:

1. Library information system

a. Engineering
b. MCA

2. Inventory control system

a. Computer Lab
b. College Store

3. Student information system

c. Academic
d. Finance

4. Time table development system

e. CSE, IT & MCA Departments
f. Electrical & Mechanical Departments

Usage of S/w:

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

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

COURSE OUTCOMES:

After the completion of the course the student will be able to:

CO1 - To describe data models and schemas in DBMS

CO2 - To understand the features of database management systems and Relational database.

CO3 - To use SQL- the standard language of relational databases.

CO4 - To understand the functional dependencies and design of the database.

CO5 - To understand the concept of Transaction and Query processing.

IT-206 F **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 fortheclass objects and add one object of DM with another object of DB.

Use a friend function to carry out the addition operation. The object that stores the results maybe

a DM object or DB object, depending on the units in which the results are required.

The display should be in the format of feet and inches or metres and cenitmetres depending on

the object on display.

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 written display function. Then search the Deque for a particular string, using the first That ( ) function and display any strings that match. Finally remove all the items from the Deque using the getLeft ( ) function and display each item. Notice the order

in which the items are displayed: Using getLeft ( ), those inserted on the left (head) of the Deque are removed in "last in first out" order while those put on the right side are removed in "first in first out" order. The opposite would be true if getRight ( ) were used.

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

COURSE OUTCOMES:

After the completion of the course the student will be able to:

CO1 - Will be able toUse the characteristics of an object-oriented programming language in a program.

CO2 - Will be Abe to Use the basic object-oriented design principles in computer problem solving.

CO3 - Will be able Use the basic principles of software engineering in managing complex software project.

CO4 - Program with advanced features of the C++ programming language.

CSE 214 F **Internets Lab.**

L	T	P
-	-	3

Class Work: 25
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 exercise to be given by the teacher concerned.

Course Outcomes:

At the end of this course student shall be able to

CO1:- practically learn the concepts of internet technology such as e-mail, FTP, Telnet and search engines

CO2:- learn the concepts of HTML , PERL

CO3:- learn the concepts Client-Server programming In Java, Network security techniques

CO4: To use the Applet, Java Script and Perl in web design.

GP-202- F

GENERAL FITNESS FOR THE PROFESSION

L	T	P	Class work : 50 Marks
-	-	2	

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

Course Outcomes

CO1 - Student will be try to perform well not only for academic performance.

CO2 – Student will be able to participate in activities like games and other extracurricular activities

CO3 – Student will be able to write technical paper, presentation and participate in competitions.