

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

Section-B

Functions of Complex Variable: Definition, Exponential function, Trigonometric and Hyperbolic functions, Logarithmic functions. Limit and Continuity of a function, Differentiability and Analyticity. Cauchy-Riemann equations, necessary and sufficient conditions for a function to be analytic, polar form of the Cauchy-Riemann equations. Harmonic functions, application to flow problems. Integration of complex functions. Cauchy-Integral theorem and formula.

Section-C

Power series, radius and circle of convergence, Taylor's Maclaurin's and Laurent's series. Zeros and singularities of complex functions, Residues. Evaluation of real integrals using residues (around unit and semi circle only). Probability Distributions and Hypothesis Testing : Conditional probability, Bayes theorem and its applications, expected value of a random variable. Properties and application of Binomial, Poisson and Normal distributions.

Section D

Testing of a hypothesis, tests of significance for large samples, Student's t-distribution (applications only), Chi-square test of goodness of fit.
Linear Programming: Linear programming problems formulation, Solving linear programming problems using (i) Graphical method (ii) Simplex method (iii) Dual simplex method.

TEXT BOOKS:

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

REFERENCE BOOKS:

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

CSE-201-F

DATA STRUCTURES USING 'C'
(CSE, EL, ECE, IT, ECE)

L T P
3 1 0

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

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

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

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

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

Arrays: Searching Sorting: Introduction, One Dimensional Arrays, operations defined: traversal, selection, searching, insertion, deletion, and sorting Searching: linear search, binary search; Sorting: selection sort, bubble sort, insertion sort, merge sort, quick sort, shell sort. Multidimensional arrays, address calculation of a location in arrays.

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

Section-B Pointers and Linked Lists

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

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

Section-C Trees and Graphs

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

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

Section-D Files Handling and Advanced data Structure

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

TEXT BOOK:

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

REFERENCE BOOKS:

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

L T P
3 1 0

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

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

Section A: Set Theory and Propositional Calculus

Introduction to set theory, Set operations, Algebra of sets, Duality, Finite and Infinite sets, Classes of sets, Power Sets, Multi sets, Cartesian Product, Representation of relations, Types of relation, Equivalence relations and partitions, Partial ordering relations and lattices, Function and its types, Composition of function and relations, Cardinality and inverse Relations, Introduction to propositional Calculus: Basic operations: AND($\wedge$), OR($\vee$), NOT($\sim$), Truth value of a compound statement, propositions, tautologies, contradictions.

Section B: Techniques of Counting and Recursion and recurrence Relation

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

Section C: Algebraic Structures

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

Section D: Section Graphs and Trees

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

TEXT BOOK:

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

REFERENCE BOOKS:

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

L T P
3 1 0

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

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

Section-A

Digital system and binary numbers: Signed binary numbers, binary codes, cyclic codes, error detecting and correcting codes, hamming codes. Gate-level minimization: The K-map method up to five variable, don't care conditions, POS simplification, NAND and NOR implementation, Quine Mc-Clusky method (Tabular method)

Section-B

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

Section –C

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

Section- D

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

TEXT BOOK:

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

REFERENCE BOOKS:

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

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

Section-A

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

Section-B

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

Section-C

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

Section-D

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

TEXT BOOKS:

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

REFERENCE BOOKS :

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

L T P
3 1 0

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

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

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

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

Section B: Classes and Data Abstraction:

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

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

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

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

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

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

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

TEXT BOOKS:

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

REFERENCE BOOKS:

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

L T P
0 0 2

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

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

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

EE-224-F

DIGITAL ELECTRONICS LAB

L T P
0 0 3

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

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

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

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

L T P
0 0 2

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

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

Q2. A point on the two dimensional plane can be represented by two numbers: an X coordinate and a Y coordinate. For example, (4,5) represents a point 4 units to the right of the origin along the X axis and 5 units up the Y axis. The sum of two points can be defined as a new point whose X coordinate is the sum of the X coordinates of the points and whose Y coordinate is the sum of their Y coordinates.

Write a program that uses a structure called `point` to model a point. Define three points, and have the user input values to two of them. Then set the third point equal to the sum of the other two, and display the value of the new point. Interaction with the program might look like this:

Enter coordinates for P1: 3 4

Enter coordinates for P2: 5 7

Coordinates of P1 + P2 are: 8, 11

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

Enter first number, operator, second number: 10/ 3

Answer = 3.333333

Do another (Y/ N)? Y

Enter first number, operator, and second number 12 + 100

Answer = 112

Do another (Y/ N)? N

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

Enter your area code, exchange, and number: 415 555 1212

My number is (212) 767-8900

Your number is (415) 555-1212

Q5. Create two classes DM and DB which store the value of distances. DM stores distances in metres and centimeters and DB in feet and inches. Write a program that can read values 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 centimetres depending on the object on display.

Q6. Create a class rational which represents a numerical value by two double values- NUMERATOR & DENOMINATOR. Include the following public member Functions:

- Constructor with no arguments (default).
- Constructor with two arguments.
- void reduce() that reduces the rational number by eliminating the highest common factor between the numerator and denominator.
- Overload + operator to add two rational number.
- Overload >> operator to enable input through cin.
- Overload << operator to enable output through cout.
- Write a main () to test all the functions in the class.

Q7. Consider the following class definition

```
class father {  
protected : int age;  
public;  
father (int x) {age = x;}  
virtual void iam ( )  
{ cout << "I AM THE FATHER, my age is : "<< age<< endl;}  
};
```

Derive the two classes son and daughter from the above class and for each, define iam () to write our similar but appropriate messages. You should also define suitable constructors for these classes.

Now, write a main () that creates objects of the three classes and then calls iam () for them. Declare pointer to father. Successively, assign addresses of objects of the two derived classes to this pointer and in each case, call iam () through the pointer to demonstrate polymorphism in action.

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

Q9. A hospital wants to create a database regarding its indoor patients. The information to store include

- a) Name of the patient
- b) Date of admission
- c) Disease
- d) Date of discharge

Create a structure to store the date (year, month and date as its members). Create a base class to store the above information. The member function should include functions to enter information and display a list of all the patients in the database. Create a derived class to store the age of the patients. List the information about all the to store the age of the patients. List the information about all the pediatric patients (less than twelve years in age).

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

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

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

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

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

Area of rectangle = $x * y$

Area of triangle = $\frac{1}{2} * x * y$

L T P
3 1 0

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

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

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

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

Section B: File Organization and Relational Model and Calculus

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

Section C: Introduction to Query Languages

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

Section D

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

TEXT BOOKS:

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

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

REFERENCE BOOKS:

1. Fundamentals of Database Systems by R. Elmasri and S.B. Navathe, 3rd edition, 2000, Addison-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

L T P
3 1 0

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

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

Section A: Electronic Mail and Internet:

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

Section B: World Wide Web:

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

Section C: Languages:

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

Section D: Privacy and security topics:

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

TEXT BOOK:

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

REFERENCE BOOKS:

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

L T P
3 1 0

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

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

Section A: Introduction:

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

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

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

Section C: Sequence Control and Data Control:

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

Section D: Storage Management, Programming languages:

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

TEXT BOOK:

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

REFERENCE BOOKS:

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

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

Section-A

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

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

Section-B

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

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

Section-C

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

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

Section-D

Supply and Law of Supply, Role of Demand & Supply in Price Determination and effect of changes in demand and supply on prices. Nature and characteristics of Indian economy (brief and elementary introduction), Privatization - meaning, merits and demerits.

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

TEXT BOOKS :

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

REFERENCE BOOKS:

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

L T P
3 1 0

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

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

Section A: Introduction

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

Section B: Transistor and Small Signal Amplifiers

Bipolar junction transistor: Introduction, Transistor, construction, transistor operations, BJT characteristics, load line, operating point, leakage currents, saturation and cut off mode of operations Eber-moll's model.

Bias stabilization: Need for stabilization, fixed Bias, emitter bias, self bias, bias stability with respect to variations in I_{CO} , V_{BE} & β , Stabilization factors, thermal stability.

Small signal amplifiers: CB, CE, CC configurations, hybrid model for transistor at low frequencies, RC coupled amplifiers, mid band model, gain & impedance, comparisons of different configurations, Darlington pair, Hybrid π -model at high frequencies, Cascaded amplifiers.

Section C: Multistage & Multistage Amplifiers

Multistage Amplifiers: Cascaded amplifiers, Calculation of gain Impedance and bandwidth, Design of multistage amplifiers.

Multistage Amplifiers: Feedback concept, Classification of Feedback amplifiers, Properties of negative Feedback amplifiers, Impedance considerations in different Configurations, Examples of analysis of feedback Amplifiers

Section D: Field Effect Transistor

Field Effect Transistor: Introduction, Classification, FET characteristics, Operating point, Biasing, enhancement & Depletion type MOSFETS.

Introduction to UJT SCR, Thyristor- Firing characteristics

TEXT BOOKS

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

REFERENCE BOOK

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

L T P
3 1 0

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

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

Section A

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

Section B: Instruction Set Architecture

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

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

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

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

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

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

TEXT BOOKS:

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

REFERENCE BOOKS:

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

L T P
3 1 0

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

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

Section-A

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

Section-B

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

Section-C

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

Section-D

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

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

TEXT BOOKS:

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

REFERENCE BOOKS:

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

L T P
0 0 3

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

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

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

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

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

Usage of S/w:

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

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

IT-208-F

MULTIMEDIA TECHNOLOGIES LAB.

L T P
0 0 2

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

1. Write a program to justify a text entered by the user on both the left and right hand side. For example, the test “An architect may have a graphics program to draw an entire building but be interested in only ground floor” can be justified in 30 columns as shown below. An architect may have a Graphics programs draw an Entric building but be interested in only ground floor.
2. Study the notes of a piano and stimulate them using the key board and store them in a file.
3. Write a program to read a paragraph and store it to a file name suggested by the author.
4. Devise a routine to produce the animation effect of a square transforming to a triangle and then to a circle.
5. Write a program to show a bitmap image on your computer screen.
6. Create a web page for a clothing company which contains all the details of that company and at-least five links to other web pages.
7. Write a program by which we can split mpeg video into smaller pieces for the purpose of sending it over the web or by small capacity floppy diskettes and then joining them at the destination.
8. Write a program to simulate the game of pool table.
9. Write a program to simulate the game Mine Sweeper.
10. Write a program to play “wave” or “midi” format sound files.

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

CSE-214-F

INTERNET LAB.

L T P
0 0 2

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

Exercises involving:

Sending and receiving mails.

Chatting on the net.

Using FTP and Tel net server.

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

Making a Web page of your college using HTML tags.

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

GP-202-F

GENERAL FITNESS FOR THE PROFESSION

L T P
0 0 2

Class Work: 50 Marks

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

GP-302-F

GENERAL FITNESS FOR THE PROFESSION

L T P
0 0 2

Class Work: 50 Marks

- Quiz & Aptitude
- Comprehension,
- Communication for specifics.
- Lets Speak
- 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.

L T P
3 1 0

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

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

Section-A

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

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

Section-B

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

Section-C

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

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

Section-D

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

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

TEXT BOOKS:

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

REFERENCE BOOKS:

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

EE-309-F

MICROPROCESSORS AND INTERFACING

L T P
3 1 0

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

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

Section-A

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

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

Section-B

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

Section-C

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

DMA: Introduction to DMA process, 8237 DMA controller.

Section-D

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

TEXT BOOKS:

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

REFERENCE BOOKS:

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

L T P
3 1 0

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

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

Section-A

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

Section-B

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

Section-C

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

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

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

Section-D

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

TEXT BOOKS:

1. Computer Graphics Principles and Practices second edition by James D. Foley, Andeies van Dam, Stevan K. Feiner and Johb F. Hughes, 2000, Addison 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, Addison 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: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

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

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

Section-B

The Design of JDBC. The Structured Query Language, JDBC Installation, Basic JDBC Programming Concepts, Query Execution, Scrollable and Updatable Result Sets, Metadata, Row Sets, Transactions, Advanced Connection Management, Introduction of LDAP

The Roles of Client and Server, Remote Method Invocations, Setup for Remote Method Invocation, Parameter Passing in Remote Methods Server Object Activation, Java IDL and CCRA, Remote Method Calls with SOAP

Section-C

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

AWT :The Rendering Pipeline, Shapes, Areas, Strokes, Paint, Coordinate Transformations, Clipping, Transparency and Composition, Rendering Hints, Readers and Writers for Images, Image Manipulation, Printing. The Clipboard, Drag and Drop

Section-D

JAVABEANS COMPONENTS: Beans, the Bean-Writing Process, Using Beans to Build an Application, Naming Patterns for Bean Components and Events Bean Property Tubes Bean info Classes Property Editors Customizes.

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

TEXT BOOK:

1. Core Java TM 2, Volume II-Advanced Features, 7th Edition by Cay Horstmann, Gary Cornell Pearson Publisher, 2004

REFERENCE BOOKS:

1. Professional Java Programming by Brett Spell, WROX Publication

2. Advanced Java 2 Platform, How to Program, 2nd Edition, Harvey. M. Dietal, Prentice Hall

HUM-453-F

HUMAN RESOURCE MANAGEMENT

L T P
3 1 0

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

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

Section A

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

Section B

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

Section C

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

Section D

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

Text Books:

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

Reference Books:

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

EE-217-F

**DIGITAL AND ANALOG COMMUNICATION
(CSE, IT)**

L T P
3 1 0

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

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

Section A: Communication system components:

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

Section B: Data Transmission System:

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

Section C: Standards in data communications:

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

Section D: Security in data communications:

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

TEXT BOOK:

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

REFERENCE BOOKS:

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

L T P
0 0 2

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

LIST OF EXPERIMENTS:

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

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

L T P
0 0 2

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

List of programs to be developed:-

1. Write a program for 2D line drawing as Raster Graphics Display.
2. Write a program for circle drawing as Raster Graphics Display.
3. Write a program for polygon filling as Raster Graphics Display
4. Write a program for line clipping.
5. Write a program for polygon clipping.
6. Write a program for displaying 3D objects as 2D display using perspective transformation.
7. Write a program for rotation of a 3D object about arbitrary axis.
8. Write a program for Hidden surface removal from a 3D object.

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

CSE-406-F

ADVANCED JAVA LAB.

L T P
0 0 2

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

Development of programs relating to:

1. JDBC
2. Servlets
3. Beans
4. RMI
5. JSP

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