

ALLIED PAPER : DISCRETE MATHEMATICS
(for B.Sc. Computer Technology & B.Sc. Multimedia and Web Technology)

Subject Description:

This subject deals with discrete structures like set theory, mathematical logic, relations, languages, graphs and trees.

Goal:

To learn about the discrete structures for computer based applications.

Objective:

On successful completion of this subject the students should have :

- Understanding the concepts of discrete mathematics
- Learning applications of discrete structures in Computer Science.

Unit I

Set theory-Introduction-Set & its Elements-Set Description-Types of sets-Venn-Euler Diagrams- Set operations & Laws of set theory-Fundamental products-partitions of sets-minsets-Algebra of sets and Duality-Inclusion and Exclusion principle

Unit II

Mathematical logic – Introduction- propositional calculus –Basic logical operations-Tautologies-Contradiction-Argument-Method of proof- Predicate calculus.

Unit III

Relations – Binary Relations – Set operation on relations-Types of Relations – Partial order relation – Equivalence relation – Composition of relations – Functions – Types of functions – Invertible functions – Composition of functions.

Unit IV

Languages – Operations on languages – Regular Expressions and regular languages – Grammar – Types of grammars – Finite state machine – Finite – State automata

Unit V

Graph Theory – Basic terminology – paths, cycle & Connectivity – Sub graphs - Types of graphs – Representation of graphs in compute memory - Trees – Properties of trees – Binary trees – traversing Binary trees – Computer Representation of general trees.

Text Books:

1. Discrete Mathematics – J.K. Sharma Second Edition – 2005 , Macmillan India Ltd.
(UNIT I TO V)

Reference Books:

1. Discrete Mathematics Structures with Applications to computer science - J. P Tremblay R Manohar – Mc Graw Hill International Edition
2. Discrete Mathematics – Dr M. K. Venketaramen, Dr N.Sridharan, N. Chandarasekaran – The National publishing Company Chennai.

**ALLIED PAPER : OBJECT ORIENTED PROGRAMMING WITH C++
(for B.Sc. Electronics & B.Sc. Electronics and Communication System)**

Subject Description: This subject deals with the programming concepts of Object Oriented Programming using C++.

Goal: To learn about Object Oriented Programming concepts.

Objective: On successful completion of this subject the students should have :

Writing programming ability on OOPS concepts like Encapsulation, Data abstraction, Inheritance, Polymorphism and Exception handling etc.,

UNIT – I

Introduction to C++ - Key Concepts of OOP – Advantages – OO Languages – I/O in C++ - C++ Declarations - Control Structures – Decision Making Statements – If...Else – Jump – GOTO – Break – Continue – Switch Case Statements – Loops in C++ - For – While – Do...While loops – Functions in C++, In line Functions – Function Overloading.

UNIT – II

Class and Objects: Declaring objects – Defining member functions – Static member variables and functions – Array of objects – Friend functions – Overloading member functions – Bit fields and Class – Constructor and Destructors – Characteristics – Calling constructor and Destructors – Constructor and Destructor with static member.

UNIT – III

Operator Overloading: Overloading unary, Binary operators – Overloading friend functions – Type conversion - Inheritance: Types of inheritance: Single, Multilevel, Multiple, Hierarchical, Hybrid and Multi path inheritance – Virtual Base classes – Abstract Classes.

UNIT – IV

Pointers: Declaration – Pointer to class, object – THIS pointer – Pointer to derived classes and base classes – Arrays – Characteristics – Arrays of classes – Memory models – New and delete operators – Dynamic objects – Binding, Polymorphisms and Virtual functions.

UNIT – V

Files: File stream classes – File Modes – Sequential read/write operations – Binary and ASCII files – Random access operation – Templates – Exception handling – Strings – Declaring and initializing string objects – String attributes – Miscellaneous functions.

TEXT BOOKS

Ashok N Kamthane: Object Oriented Programming with ANSI and Turbo C++, Pearson Education Publ., 2003.

REFERENCE BOOKS

1. E. Balagurusamy: Object Oriented Programming with C++, TMH Pub., 1998.
2. Maria Litvin and Gary Litvin: C++ for you++, Vikas Publ, 2002.
3. John R Hubbard: Programming with C++, TMH Publ. II Edition, 2002.

**ALLIED LAB : OBJECT ORIENTED PROGRAMMING WITH C++
(for B.Sc. Electronics & B.Sc. Electronics and Communication System)**

1. Create a class to implement the data structure STACK . Write a constructor to initialize the TOP of the stack to 0 . Write a member function POP() to delete an element . Check for overflow and underflow conditions.
2. Create a class ARITH which consists of a FLOAT and an integer Variable . Write member ADD(), SUB (), MUL (), DIV (), MOD () to perform addition, multiplication, division and modulus respectively . Write member functions to get and display values.
3. Create a class MAT has a 2-d matrix and R&C represents the rows and columns of the matrix . Overload the operators +, -, * to add subtract and multiply two matrices. Write member functions to get and display MAT object values.
4. Create a class STRING . Write member function to initialize, get and display strings. Overload the operator + to concatenate two strings, = = to compare two strings and a member function to find the length of the string.
5. Create a class which consists of EMPLOYEE detail like eno, ename, dept, basic-salary, grade. Write member functions to get and display them. Derive a class PAY from the above class and write a member function to calculate da , hra , pf depending on the grade and Display the Payslip in a neat format using console I/O.
6. Create a class SHAPE which consist of two VIRTUAL FUNCTIONS Cal_Area() and Cal_PERI to calculate AREA and PERIMETER of various figures. Derive three classes SQUARE,RECTANGLE and TRIANGLE from the class SHAPE and calculate AREA and PERIMETER of each class separately and Display the result.
7. Create two classes which consists of two private variables, one float And one integer variables in each class. Write member functions to get and display them . Write FRIEND function common to arguments. And the integer and float values of both the objects separately and Display the result.
8. Write a user defined function USERFUN() which has the formatting commands like setw(), showpoint , showpos precision(). Write a program which prints an multiplication table and uses USERFUN() for formatting.
9. Write a program to perform Insertion , Deletion and Updation using files .
10. Write a program which takes a file as argument and copies in to another file with line numbers using Command Line Arguments.

**ALLIED PAPER : COMPUTER PROGRAMMING IN C
(for B.Sc. Bio-Chemistry and B.Sc. Bio-Technology Degree Courses)**

COMPUTER PROGRAMMING IN C

UNIT I

Computer Algorithms: Algorithms – Characteristics of computers - An illustrative computer algorithm.

Developing Algorithms: Flowcharts - A simple model of a computer flowcharting examples.

UNIT II

Programming Preliminaries : High level languages - C Language - Description of Programming languages - Structure of C programming language – constants - scalar variables – declaring Variable names - defining constants - Defining variables - Various Expressions and operators.

UNIT III

Input function - Output function – compound and conditional statements - While loop – do.. while loop - for loop. Simple Programs using above verbs.

UNIT IV

Arrays - Rules for arrays - multiple subscripts in arrays - Multi-dimensional arrays - for loop with arrays - Simple programs.

UNIT V

Logical operators and expressions - switch statement - break Statement - continue statement - label - goto statement. Functions - defining function - using function - rules - arrays in functions - Character data type - manipulation of strings.

TEXT BOOK:

COMPUTER PROGRAMMING IN C : V.Rajaraman
(PHI Publication)

REFERENCE BOOKS :

1. PROGRAMMING IN ANSI C : E.Balagurusamy
(Tata McGraw Hill Pub.)

2. PROGRAMMING IN ANSI C : Ashok N.Kamthane
(Pearson Education)

ALLIED: COMPUTER PROGRAMMING IN C

LIST OF PRACTICALS

1. Write a C program to find the largest among the three given numbers.
2. Write a C program to print the given FIVE digit number in reverse order.
3. Write a C program to print first 50 terms of Fibonacci sequence.
4. Write a C program to find the smallest number in the given set of N numbers
5. Write a C program to find the given word is palindrome or not
6. Write a C program to count the number of positive , negative and zero integers from the set of N numbers.
7. Write a C program to sort the given set of N numbers in ascending order.
8. Write a C program to find the addition and subtraction of the given two square matrices
9. Write a C program to find the multiplication of the given two square Matrices.
10. Write a C program to count the number of words and number of characters in a sentence.