

TIME : 3hours**M.Marks : 60****Note : Part I is compulsory and all questions carry equal marks.****Attempt any four questions from Part II.****PART I**

- Q.No.1(a)** Translate infix expression into its equivalent postfix expression:
(a+b)*c+d/n).
- (b)** How to calculate the address in multidimensional array.
- (c)** Differentiate between linear and binary search.
- (d)** What is the condition of queue full and queue empty condition in ordinary queue?
- (e)** Write four different methods of printing of an array element.
- (f)** What is the use of header linked list?
- (g)** Define the term array, subscript, subscripted variable and string.
- (h)** Write different methods of traversal of binary tree.
- (i)** What do you mean by Hashing?
- (j)** Give two applications of stack.

2*10=20**PART II**

- Q.No.2(a)** Write a C programme that finds the largest and smallest of a number in a string. **5**
- (b)** Explain Big-Oh notation with the help of examples. **5**
- Q.No.3(a)** What is merge sort? Write algorithm for merge sort and derive its run time complexity. **5**
- (b)** Trace the steps of insertion sort for the list of numbers: 12,19,33,26,29,35,22 compute the total no. of comparisons made. **5**
- Q.No.4(a)** Differentiate between linear queue and circular queue. Which one is better and why? **5**
- (b)** Differentiate between linear and binary search. Find out the complexity of binary search. Compute its time complexity with linear search. **5**
- Q.No.5(a)** Explain various properties of graph and how an element can be deleted in a graph using linked list form. **5**
- (b)** Give static implementation of stack by writing push and pop routine for it. **5**
- Q.No.6(a)** Discuss how the delete operation can be performed in a binary search tree with the help of an algorithm. **5**
- (b)** Differentiate between index, sequential and direct file organisation. **5**
- Q.No.7(a)** Differentiate between AVL and B-Tree. What are the various cases of insertion of a key K in an AVL Tree. **5**
- (b)** What is graph? How it can be stored in memory? Explain BFS and DFS with the help of suitable example. **5**