4TH SEM

Course-DC3

(Data Structure and Algorithms)

Time: 1 hrs **Max.Marks: 25**

Group- A

(Answer any five questions. Each question carries two marks) ***2*5=10***

1. (a) Distinguish between a linear and nonlinear data structure.
   (b) What is Stack? Why it is known as LIFO?.
   (c) strictly binary tree with example?
   (d) What are push and pop operations?
   (e) Convert the infix (a+b)*(c+d)/f into postfix & prefix expression
   (f) What is Queue? Why it is known as FIFO?.
   (g) Define Recursion with example?

Group- B

Answer any three questions. **[5x3=15]**

2) Write the algorithm for insertion sort and merge sort with examples and discuss their complexities.

3) Explain the binary search algorithms with example.

4) What do you mean by Link list? Write an algorithm to insert and delete a node in Singly Linked List.

5) Create a Binary Search Tree for the following data and do in-order, Preorder and Post-order traversal of the tree. 50, 60, 25, 40, 30, 70, 35, 10, 55, 65, 5

6) Write a short note(any one)

   a) Explain in detail about Open Addressing

   b) Write down the algorithm for solving Towers of Hanoi problem?