7/5/18

Roll No. 8008734 Total Pages : 04

BCA/M-18 1916

ADVANCED DATA STRUCTURE

BCA-241

Time : Three Hours] [Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

1. (a) Define Complete Binary Tree with example. 3

   (b) Draw the tree for the expression : 3

   $$X = (3a + b)(7c - d)^5$$

   (c) Differentiate between fixed and Variable length record. 3

   (d) What are the conditions for Binary Search ? Also write the complexity of Binary Search. 3

   (e) Define :

   (i) Graph

   (ii) Weighted Graph

   (iii) Complete Graph

   (iv) Diagraph.

Unit I

2. (a) What is Binary Tree ? Explain the various methods of representation of Binary Tree in Memory. **10**

   (b) Write an algorithm to traverse a Binary tree using Preorder Method. **6**

3. (a) Draw a binary tree by the following Inorder and Preorder traversal of Binary Tree : **10**

Inorder	**Preorder**
40	18
2	5
80	2
5	40
9	80
18	9
6	26
26	6
12	12

   (b) Describe Binary Search Trees and its applications with example. **6**

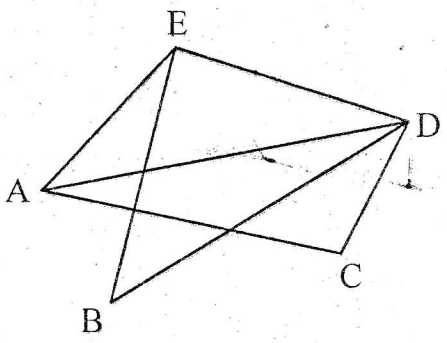
Unit II

4. (a) What is Path Matrix ? How is it obtained from Adjacency Matrix ? **10**

   (b) Describe the Depth first graph traversal algorithm. **6**

5. (a) Explain the various methods of representing Graph is Memory. 10

(b) Given the following Graph : 6



(i) Find the degree of every vertex.

(ii) Find the Adjacency Matrix of Graph.

Unit III

6. What is Sorting ? Write algorithm for Bubble Sort. Describe its complexity. Sort the following elements according to Bubble Sort : 16

32, 51, 85, 27, 23, 66, 13, 57

7. (a) What is Radix Sort ? Explain by giving suitable example of at least three digits. 10

(b) Differentiate between Linear and Binary Search. 6

BCA-IV

Unit IV

8. Explain Sequential, Direct and Indexed Sequential File Organization with example. **16**

9. (a) What is File ? Describe various types of files and their uses. **10**

(b) Describe various file operations that can be done on files. **6**