Roll No…… Total Pages: 3

1901

BCA/M-17

ADVANCED DATA STRUCTURE

Paper: BCA-241

Time: Three Hours Maximum Marks: 80

Note: Attempt five questions including No. 1 which is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Define Binary tree? How is it different from general tree?
   (b) Convert the Infix expression (A+B) (E-F) + D into Prefix and Postfix Notations.
   (c) Differentiate between Primary and Secondary key.
   (d) What is Graph? How is it different from tree ?
   (e) What is the complexity of algorithm? Also find the complexity of Linear Search Algorithms.

Unit-I

2. (a) Draw a diagram of Binary tree by given Preorder and Inorder Traversal Sequence of Nodes :

Inorder	Preorder
E	F
A	A
C	E
K	K
F	C
H	D
D	H
B	G
G	B

   (b) What is Binary Search Tree? Write an algorithm to search an item in Binary Search Tree.

3. (a) Explain the various methods of tree traversal by giving suitable example.
   (b) What is Huffman Tree? Write steps to generate Huffman tree.

Unit-II

4. (a) Explain the various methods of Graph traversal by giving suitable example.
   (b) Define the following :
   (i) Directed Graph
   (ii) Cycle

(iii) Complete Graph.

5. (a) Explain the Warshall's Algorithm for the shortest path.
   (b) What is Adjacency Matrix ? How is it used for graphs ?

Unit-III

6. What is Searching ? Write algorithm for Binary Search and explain with example. How is it different from Linear Search ?

7. (a) What is Help Sort ? Write steps for Heap Sort. Sort the following list using Heap sort :
   9, 10, 11, 8, 7, 14, 13, 15. 17

   (b) Differentiate between the following :
   (i) Internal and External Sorting
   (ii) Quick sort and Merge sort.

Unit-IV

8. What do you mean by Hashing ? Explain hash function and various methods of collision resolution.

9. (a) Explain direct access files organization by giving its advantages and disadvantages.
   (b) Define the following :
   (i) Record
   (ii) Data item
   (iii) Master file
   (iv) Work file.