

Roll No.

Total Pages : 3

1038

BCA (12-14)/D-15

DATA STRUCTURES-I

PAPER: BCA-232

Time: Three Hours

[Maximum Marks: 80]

Note: Attempt five questions in all, selecting one question from each unit. All questions carry equal marks.

Compulsory Question

1. (a) What is time-space complexity?
(b) What is Big-o notation?
(c) Discuss sparse matrices.
(d) Differentiate between array and linked list.
(e) Discuss the concept of polish notations.
(f) What is priority queue? Why it is required?
(g) What is the key difference between Tree and Graph? Give example.
(h) Write short note on linked representation of Binary tree.

Unit-I

- 2 (a) define Data structure. Explain various applications of Data structures.
(b) Explain the various type of structures used to store strings.
3. Explain the various algorithms to determine whether or not a given string pattern say 'P' appears in a string of text say 'T'

Unit-II

- 4 (a) Explain the procedure to compute the address of a particular element in a linear array. Also write an algorithm to count the total number of elements in the linear array.
(b) Define 2-Dimensional array. Explain the following techniques used to store 2-D array in memory:
(i) Column major order.

(ii) Row major order.

5. (a) Write algorithms for insertion/deletion into two way linked list. Explain with examples.

(b) Explain the concept of Garbage collection.

UNIT-III

6. Explain:

(a) Array representation of stack.

(b) Linked representation of stack.

(c) Applications of queue.

7. Write algorithm and give examples:

(a) To insert an element into a queue.

(b) to delete an element from the queue.

UNIT-IV

8. Explain the following Tree traversal algorithm with examples:

(a) Preorder traversal.

(b) Inorder traversal.

© Postorder traversal.

9. (a) Explain the link representation of a Graph with example.

(b) Explain the following terminology:

(i) Height of a tree.

(ii) Complete binary tree.

(iii) Multigraph

(iv) Path matrix.

