Roll No. .....

Total Pages : 3

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GSM/D-21

DATA STRUCTURES

Paper–BCA-232

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *five* questions in all. Question No. 1 is compulsory. Attempt *four* more questions selecting exactly one question from each unit. All questions carry equal marks.

Compulsory Question

1. (a) What is the difference between primitive and non-primitive data structure.

(b) What are the operations of data structures explain them briefly ?

(c) What is an array ? Mention its properties.

(d) Differentiate between iteration and recursion.

(e) Why stack is called a LIFO data structure ?

(f) Name various methods of traversing a binary tree.

(g) What do you mean by malloc() and calloc() functions. Explain in brief.

(h) How do you represent a queue in computer memory ?

(8×2=16)

UNIT–I

2. (a) What are the various types of complexities of an algorithm ? Discuss big-O notation to represent complexity. 8

   (b) Explain different data structures available for representing/storing data. What are methods available for representing them. 8

3. What is a string ? Explain different operations that can be performed on a string using examples. 16

UNIT–II

4. What is an array ? What is the difference between one dimensional and two dimensional array ? Write an algorithm to calculate the average of the values of an array and print the even numbers stored in an array. 16

5. (a) Write an algorithm to search an element in a linked list.

   (b) Write an algorithm to delete an element from two way linked list.

UNIT–III

6. (a) Explain the following terms :

   (i) Infix expression.

   (ii) Polish notation.

   (iii) Reverse polish notation. 8

   (b) Write an algorithms to perform PUSH() and POP() in stacks. 8

7. (a) Write an algorithm to insert a node in a queue. What is the difference between a queue and a circular queue. 8

(b) What are deques. Explain its variations. 8

UNIT–IV

8. What is a binary search tree ? Write in short about.

(a) Inorder traversal.

(b) Preorder traversal.

(c) Postorder traversal. (8+8=16)

9. (a) What is the difference between breadth first search and depth first search ? 8

(b) Explain shortest path algorithm for finding the shortest path in a graph. 8
