

# AE-1310

B.C.A. New Course (Part - I)  
Term End Examination, 2016-17

## DATA STRUCTURE

*Time : Three Hours] [Maximum Marks : 100*  
*[Minimum Pass Marks : 33*

**Note** : Answer **all** questions. The figures in the right-hand margin indicate marks.

1. Answer the following questions in short :  $2\frac{1}{2} \times 10$ 
  - (a) What is primitive data type ? Write the name of any three Primitive data types.
  - (b) What is non-linear data structure ?
  - (c) What is doubly linked list ?
  - (d) What is polish notation ?
  - (e) “Threaded binary tree are useful in tree traversal.” Justify.
  - (f) What is  $\theta$  (Theta) notation ?

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- (g) What is binary tree ?
  - (h) What is external sorting ? Write the name of external sorting algorithm.
  - (i) What is heap ?
  - (j) What is algorithm ? Write the major factor in analysis of algorithm.
2. Write an algorithm to delete a given element from the one-dimensional array. 15

**OR**

What is array ? Explain its types with suitable example.

3. Write an algorithm to find the location of the given element in the circular linked list. 15

**OR**

Write an algorithm to insert an element at any position in the doubly linked list.

4. Evaluate the following postfix expression using stack. 15

$AB + C * DE - F G + * \dots$

**OR**

( 3 )

What is DFS ? Write an algorithm of DFS with example.

5. What is heap sort ? Explain heap sort algorithm with example of at least 8 elements. 15

**OR**

What is Binary Search Tree ? Explain binary algorithm with example.

6. Explain the best case, average case and worst case time complexity of the quick-sort algorithm. 15

**OR**

Explain the best case, average case and worst case time complexity of the insertion sort algorithm.

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