# **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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(Turn Over)

## **(2)**

- (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.

#### 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.

#### OR

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

**4.** Evaluate the following postfix expression using stack.

 $AB + C*DE - FG + * \dots$ 

### OR

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(Continued)

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## (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.

#### OR

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

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