

I.M.C.A. SEM-VIII (2014 Course) CBCS : SUMMER - 2019

SUBJECT : APPLIED DATA STRUCTURES

Day : Tuesday  
Date : 16/04/2019

S-2019-2142

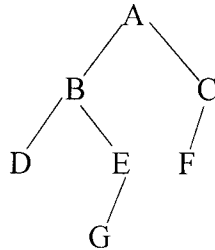
Time : 10.00 AM TO 01.00 PM  
Max. Marks : 100

N. B. :

- 1) Attempt **Any FOUR** questions from **Section – I** and **Any TWO** questions from **Section – II**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in the **SAME** answer book.

SECTION - I

- Q.1 What is an Abstract Data Type? What is the role of pre-condition and post-condition in implementing a Data Structure? (15)
- Q.2 What is a Stack? Explain algorithm to implement Stack with the help of array. (15)
- Q.3 What are advantages of using De-queue over Queue data structure? Write an algorithm for insertion operation in a De-queue. (15)
- Q.4 Write algorithm to implement Doubly link list. (15)
- Q.5 Traverse the following tree using Depth First Search. (15)



- Q.6 What is Binary Search Tree? Explain algorithm for insertion of a node in Binary Search Tree. (15)
- Q.7 Write short notes on **ANY THREE** of the following : (15)
- a) Balanced Trees
  - b) Quick sort
  - c) Heap sort
  - d) HASH table

SECTION - II

- Q.8 Write an algorithm for Binary Search. Compare the complexity of Binary Search with Linear Search. (20)
- Q.9 a) Write an algorithm to convert infix notation to postfix notation. (10)
- b) Write postfix notation of following expression using Stack : (10)  
 $A+(B*C - (D/E - F) - G) - H$
- Q.10 Write algorithm for Merge sort. What is the complexity of Merge sort? (20)