

I.M.C.A. SEM-VIII (2014 COURSE) CBCS : SUMMER - 2018

SUBJECT : APPLIED DATA STRUCTURES

Day : **Friday**  
Date : **27/04/2018**

**S-2018-1778**

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 **SEPARATE** answer book.

**SECTION - I**

- Q.1** What is an Abstract Data Type? How an Abstract Data Type is implemented in a language. (15)
- Q.2** What is a linear Data Structure? Explain following operations on an Array with the help of algorithm: (15)
- a) Insertion
  - b) Deletion
  - c) Traversing
- Q.3** Differentiate between the following Data Structures : (15)
- a) Array Vs link list
  - b) Stack Vs Queue
- Q.4** Write an algorithm to implement circular Queue. What is advantage of circular Queue over normal Queue? (15)
- Q.5** Write an algorithm to implement following deletion operation on a link list. (15)
- a) Deletion of first node
  - b) Deletion of last node
- Q.6** What are HASH tables? How use of Hash table improves the efficiency of search activity? (15)
- Q.7** Write short notes on **ANY THREE** of the following : (15)
- a) Red Black Tree
  - b) Linear Search
  - c) Quick Sort
  - d) Pre-condition / Post-condition

**SECTION - II**

- Q.8** What is a binary search tree? Suppose following list a letters is inserted in order into an empty binary search tree : (20)  
J, R, D, G, T, E, M, H, P, A, F, Q.
- Q.9** What is Heap sort? Explain the complexity of Heap sort. What is advantage of Heap sort over other sorting algorithms? (20)
- Q.10** What are balanced trees? How AVL tree are used to balance the trees by using different types of rotations? (20)

\* \* \* \*