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# B.Sc.(IT) (2013 & 2014) (Sem.-2) DATA STRUCTURES THROUGH 'C'

Subject Code: BS-108 Paper ID: [B0408]

Time: 3 Hrs. Max. Marks: 60

#### **INSTRUCTION TO CANDIDATES:**

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains SIX questions carrying TEN marks each and a student has to attempt any FOUR questions.

#### **SECTION-A**

## Q1 Answer briefly:

- a) Define external sorting.
- b) What is queue?
- c) List various applications of priority queue.
- d) How tree is represented using array?
- e) Write the working principle of binary search.
- f) What is push and pop operation? Explain with example.
- g) Write the complexity of selection sort, bubble sort and insertions sort algorithms.
- h) Define sparse matrix.
- i) What is need of pointers in data structure?
- j) List various applications of stack.

1 | M - 1 2 5 1 0 (S3) - 1 6 2 3

### **SECTION-B**

- Q2 Define Array. What ate its different types? Explain different operations that can be performed over an array.
- Q3 Write notes on the following:
  - a) Algorithm analysis.
  - b) String and their representation.
- Q4 What is linked list? Write and explain an algorithm to sort a linked list.
- Q5 What is stack? Explain how stack can be implemented using an array.
- Q6 Explain the following:
  - a) Infix to postfix conversion.
  - b) Quick sort.
- Q7 What is binary tree? How it is different from BST? Write and explain an algorithm to search an item from a BST.

**2** | M - 1 2 5 1 0 (S 3) - 1 6 2 3