

Roll No. ....

Total Pages : 3

**1005/MJ**

F-7/2051

**DATA STRUCTURES**

Paper–CSM-126

Semester–II

Time allowed : 3 Hours] [Maximum Marks : 30

**Note:** The candidates are required to attempt two questions each from section A and section B carrying 4 marks each and the entire section C consisting of 7 short answer type questions carrying 2 marks each.

**SECTION-A**

1. What is a Data Structure? Discuss the common operations that can be performed on a data structure. 4

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2. Define Stack. What operations are performed on a stack? Write applications of a stack. 4
3. Define Queue. Explain insertion and deletion algorithms for a circular queue. 4
4. Define Linked List. How linked list can be represented in the memory? 4

**SECTION-B**

5. Define Graph. What are the various methods of graph traversal? Write algorithms for the traversal methods. 4
6. Write an algorithm for Dijkstra's algorithm for shortest path. 4
7. Explain the steps for Binary Search. 4
8. Explain the algorithm for Bubble Sort. 4

**SECTION-C**

9. Attempt all questions : 7×2= 14  
(i) What do you mean by Time-space Trade Off?

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- (ii) What is Recursion?
- (iii) Define Heap.
- (iv) What is the difference between DFS and BFS?
- (v) What do you mean by a Sparse Array?
- (vi) Write an algorithm for pre-order traversal of a binary tree.
- (vii) Differentiate between a binary tree and binary search tree.