

Code: CS3T2

**II B.Tech - I Semester – Regular/Supplementary Examinations
November - 2018**

**DATA STRUCTURES
(COMPUTER SCIENCE & ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1.

- a) Define Big Oh Notation.
- b) What is Data Abstraction explain with an example.
- c) A circular Queue has a better utilization of space than linear Queue Justify.
- d) Which data structure is used to implement recursion, explain with an example?
- e) How a new node is created from structure using a structure pointer for a singly linked list?
- f) What do you mean by NULL in link list? Explain with example.
- g) What is the difference between complete binary and Full Binary tree?
- h) Explain the Graph and its representation methods.
- i) Define Spanning tree.
- j) Define binary search tree.
- k) List the two important key points of depth first search.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) What are the disadvantages of recursive programming over iterative programming? 6 M

b) Write Merge Sort algorithm trace the algorithm for the following data 10 M

5, 3, 2, 6, 4, 1, 3, 7

3. a) Write an algorithm for the evaluation of postfix expression. 6 M

b) How would you implement a stack? Write routines for creation and inserting of elements into it. 10 M

4. a) Given two lists L1 and L2, write the routines to compute $L1 \cap L2$ using basic operations. (Hint : for efficient performance, sort the lists). 10 M

b) Write the routines for inserting and deleting elements from a queue. Check for the conditions Q-empty and Q-Full. 6 M

5. a) Write the routines to insert and remove a node from Binary Search Tree. 8 M

b) Explain Different Tree Traversals with suitable examples.

8 M

6. a) Write an algorithm to find the minimum cost spanning tree of an undirected, weighted Graph.

8 M

b) Define graph. Explain different Graph Traversal techniques.

8 M