

Code: CS3T2

II B.Tech - I Semester – Regular Examinations – December 2015

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

Duration: 3 hours

Max. Marks: 70

PART – A

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

11x 2 = 22 M

1. a) What is the difference between iteration and recursion?
- b) What is data abstraction?
- c) What is a stack? Give its operations.
- d) What is the time complexity of Selection sort?
- e) Convert the following infix expression into postfix:
 $(A+B)*(C+B)*(E/F)$.
- f) What is sparse matrix representation?
- g) Differentiate single linked list and double linked list.
- h) What is a binary tree?
- i) How to calculate the height of binary search tree?
- j) Write any two applications of graphs.
- k) What is a spanning tree?

PART – B

Answer any **THREE** questions. All questions carry equal marks. 3 x 16 = 48 M

2. Compare the advantages and disadvantages of bubble, insertion and selection sort using the following list of numbers. 23 56 14 34 58 97 72. 16 M

3. Write an algorithm for converting infix expression to postfix expression with suitable example. 16 M

4. a) Compare singly and doubly linked list to perform insertion and deletion operations. 8 M

b) Explain about application of single linked list to represent polynomial expressions. 8 M

5. a) Explain how Binary search tree is different from Binary tree. 10 M

b) Construct a BST from the given list
9, 3, 5, 27, 4, 13, 20, 39, 46, 17. 6 M

6. a) Write about Prim's algorithm with example. 8 M

b) Write about Kruskal's algorithm with example. 8 M