Code No: **PT4104C** **R13** **Set No. 1**

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

DATA STRUCTURES

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
****

PART–A *(22 Marks)*

1. a) Which sorting algorithm is best if the list is already sorted and why? [4]
   b) List any four applications of Priority Queues. [4]
   c) Give the three tuple representation of Sparse matrix. [4]
   d) Determine the number of nodes in a Full binary tree of height 5. [3]
   e) Define Balanced binary tree. [4]
   f) List some of the real life applications of Graph data structure. [3]

PART–B *(3x16 = 48 Marks)*

2. What is a Radix Sort Technique? How it is different from Comparison-based sorting techniques? Explain the Radix Sort method for sorting the following unordered list of elements 33,100,2,14,27,101,104,8. And also compare the efficiency of Radix Sort with other Comparison-based sorting techniques. [16]

3. a) Convert the Infix expression A+(B*(C-D)/E) into Postfix expression by explaining each and every step. [8]
   b) What is a Circular queue? Explain the Insertion and Deletion operations on Circular queues. [8]

4. a) With neat diagrams, explain the algorithm for reversing a singly linked list [10]
   b) Discuss the advantages and disadvantages of Doubly linked lists. [6]

5. a) What is a Binary tree? Give the properties of Binary tree. Explain about various types of Binary tree. [8]
   b) Explain about different tree traversal techniques. [8]

6. Define a Binary Search Tree? Write the procedures to perform insertion, deletion and searching in Binary Search Tree? [16]

7. a) Explain the representation of graph using singly linked list. [8]
   b) What is Minimum spanning tree? Explain the Prim's algorithm for generating a minimum spanning tree. [8]