Code No: R161213 **R16** SET - 1

I B. Tech II Semester Supplementary Examinations, Nov/Dec - 2019
DATA STRUCTURES
(Com. to ECE, EIE, E Com E)

Time: 3 hours Max. Marks: 70

Note: 1. Question paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) Define sparse matrix. (2M)
   b) Convert the following infix expression into postfix expression: A+B^(C+D)-E*F+G. (2M)
   c) List advantages of linked list over arrays. (2M)
   d) Write the importance of a threaded binary tree. (2M)
   e) List any two differences between graphs and trees. (2M)
   f) Write about heap sort technique. (2M)
   g) List the advantages of circular linked list over single linked list. (2M)

PART -B

2. a) Explain representation of array as an ADT along with their advantages and disadvantages. (7M)
   b) Write ADT for an array implementation of polynomial addition. (7M)

3. a) Explain the procedure to evaluate postfix expression. Evaluate the following Postfix expression 7 3 4 + - 2 4 5 / + * 6 / 7 +. (7M)
   b) Explain the basic operations of queue with pseudo code. (7M)

4. a) Write an algorithm to push and pop an element from linked stack. (7M)
   b) List various operations of linked list and explain how to insert a node anywhere in the list. (7M)

5. a) How to represent binary tree using arrays and linked list? (7M)
   b) Write in-order, pre-order and post-order traversal of a binary tree. (7M)

6. a) What are connected components of graph? Is there any method to find out all the Connected components of graph? Explain. (7M)
   b) Discuss Kruskal's algorithm advantages and disadvantages. (7M)

7. a) Compare and contrast iterative merge sort with recursive merge sort. (7M)
   b) Explain heap sort with an example. (7M)
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