R16

SET - 1

I B. Tech II Semester Supplementary Examinations, July/August - 2021
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) Write the computational advantages of using Sparse matrix implementation over normal matrices.   (2M)

    b) Why we use postfix/prefix expressions than infix form?   (2M)

    c) How circular linked list are useful in polynomial representation?   (2M)

    d) Describe the main features of priority queues.   (2M)

    e) Which data structures are used in DFS and BFS?   (2M)

    f) How do you delete an element from heap?   (2M)

    g) Give the best, worst and average time complexities of merge sorting technique.   (2M)

PART -B

2. a) What are Sparse Matrices in Data structures? Explain various representations of Sparse matrices.   (7M)

    b) What is polynomial ADT? How do you implement a polynomial ADT using an array? Explain.   (7M)

3. a) Describe the five basic operations which are performed on Stack with an example.   (7M)

    b) Convert the Infix expression A+B*C+D into Postfix expression by explaining each and every step.   (7M)

4. a) Describe the Insertion and Deletion operations on Circular linked lists.   (7M)

    b) Explain how to perform addition of two Polynomials using linked lists.   (7M)

5. a) Explain about different tree traversal techniques.   (7M)

    b) Construct a Binary Search Tree by inserting the following sequence of elements 10,12,5,4,20,8,7,15,13 starting from an empty tree.   (7M)

6. a) Describe the All-Pairs Shortest Path algorithm with an example.   (7M)

    b) Explain the Prims algorithm for generating minimum cost spanning tree.   (7M)

7. Explain the step-by-step procedure for sorting the following unordered list of elements 52, 37, 63, 14, 17, 8, 6, 25using Quick sort and Heap sort techniques.   (14M)