Code No: R201208 **R20** SET - 1

I B. Tech II Semester Supplementary Examinations, March- 2022

DATA STRUCTURES THROUGH C

(Only for EEE)

Time: 3 hours Max. Marks: 70

Answer any five Questions one Question from Each Unit
All Questions Carry Equal Marks

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UNIT-I

1. a) Illustrate multi-dimensional array ADT's with sample program and analyze it. (7M)
   b) Write a C program to print transpose of a given matrix and also derive its time complexity. (7M)

Or

2. a) Write an algorithm for evaluating a postfix expression using stack. Evaluate the following postfix notation 123*+5-. (7M)
   b) Explain the Queue ADT with an example. (7M)

UNIT-II

3. a) How can we represent a Pointer to arrays and Array of Pointers? Explain. (7M)
   b) Discuss briefly about Header Linked lists and its Operations. (7M)

Or

4. a) How can we represent a stack using linked list? Explain. (7M)
   b) Explain the procedure for deleting a node in a Single linked list. (7M)

UNIT-III

5. a) Construct a Binary search Tree by inserting the following list of elements. Assume the initial tree is empty. (7M)
   b) Explain the Procedure for Preorder traversal with an example. (7M)

Or

6. a) Explain 2- way search trees. (7M)
   b) Write the Properties of B-Trees of order 'm'. Explain the procedure to insert an element into B-Tree of order 'm'. (7M)

UNIT-IV

7. a) Explain Depth First Search graphs traversal algorithms with suitable example. (7M)
   b) Explain Prim's algorithm to find the Minimum Spanning tree of a graph. (7M)

Or

8. a) Explain types of memory representation of Graphs with an example. (7M)
   b) How to find the transitive closure of a graph using Warshall's algorithm? Explain with example. (7M)
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UNIT-V

9. a) Explain Linear Search with an example. (7M)

   b) Explain Quick sort with an example. (7M)

Or

10 a) Which sorting technique performs better when the lists of elements are partially sorted? Explain. (7M)

   b) Explain iterative merge sort. (7M)