

II B. TECH I SEMESTER REGULAR EXAMINATIONS, FEB - 2022
DATA STRUCTURES
(Common to CSE, INF, CSM, CIC, CSO, and AID)

Time: 3 Hours

Max. Marks: 70

Note: Answer **ONE** question from each unit (**5 × 14 = 70 Marks**)

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UNIT-I

1. a) What is Linear Search? Explain Linear search algorithm with an example. [7M]
- b) Explain about Big O, Omega and Theta notations with necessary examples. [7M]

(OR)

2. a) Give an algorithm for quick sort and explain its time complexity. Trace the algorithm for the following data: [7M]  
65 70 75 80 85 60 55 50 45
- b) Define Linear List. Explain with an example the representation of Linear Lists. [7M]

UNIT-II

3. a) Explain the procedure to evaluate postfix expression. Evaluate the following Postfix expression  $7\ 3\ 4\ +\ -\ 2\ 4\ 5\ /\ +\ * 6\ /\ 7\ +$ . [7M]
- b) Implement count(), search(), concat() operations on Single linked list. [7M]

(OR)

4. a) Explain Circular linked list with example. [7M]
- b) Discuss the representation of Double linked Lists with an example. [7M]

UNIT-III

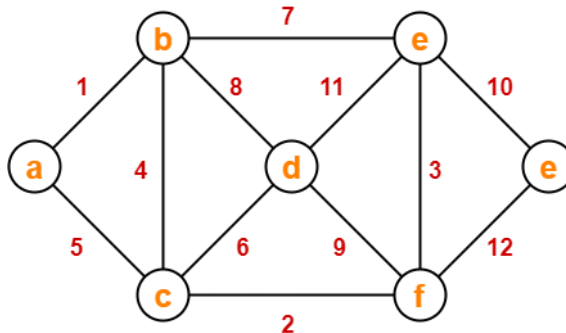
5. a) Explain Tree Traversal Techniques with examples. [7M]
- b) Define Binary Search Tree. Construct Binary Search Tree for the following elements: 45, 39, 56, 12, 34, 78, 32, 10, 89, 54, 67, 81 [7M]

(OR)

6. a) Define Threaded Binary Tree. Explain One-way threading with an example. [7M]
- b) Explain Max Heap with suitable example. [7M]

## UNIT-IV

7. a) Explain Depth First algorithm with an example. [7M]  
 b) Compute the Minimum Cost Spanning Tree for the given graph [7M] using Prim's Algorithm



(OR)

8. a) Explain Dijkstra's algorithm with an example. [7M]  
 b) Explain all pair shortest path Floyd Warshall's algorithm with an example. [7M]

## UNIT-V

9. a) Define Quadratic Probing. Using Quadratic probing, insert the keys 72,27,36,24,63,81,92, and 101 into the table. Assume table size 10. [7M]  
 b) Explain Collision Resolution by Double Hashing. [7M]
- (OR)
10. a) Explain Folding method of Hashing with an example. [7M]  
 b) Discuss Brute Force Pattern Algorithm with an example. [7M]

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