Code No: R203105F **R20** SET - 1

III B. Tech I Semester Supplementary Examinations, July -2023
DATA STRUCTURES
(Common to CE,ME,ECE)

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) Explain the stack data structure with suitable example. Give algorithms for Push, Pop operations. [7M]
   b) Write an algorithm to delete an element anywhere from double linked list. [7M]

(OR)

2. a) Explain the operations on single linked list. [7M]
   b) What is a queue? Write an algorithm for implementing queue using linked list? [7M]

UNIT-II

3. a) Explain Linear search with an example [7M]
   b) Explain selection sort algorithm? [7M]

(OR)

4. a) What is Hash function? What are the types of Hash functions? [7M]
   b) Explain Insertion sort algorithm and trace the steps of insertion sort for sorting the list- 17, 19, 33, 26, 29, 55, 22, 37, 03. [7M]

UNIT-III

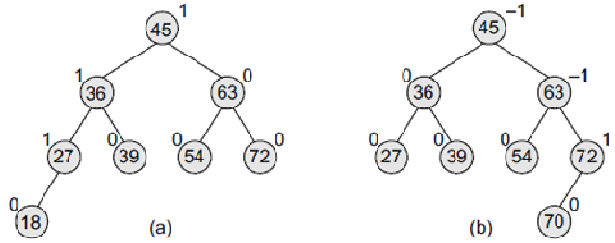
5. a) What is a binary tree? Construct a binary tree with the following data: 50, 20, 70, 49, 71, 51, 99, 73, 101, 00, 75. [7M]
   b) Explain the procedure for BST insertion with a suitable example. [7M]

(OR)

6. a) What is expression tree? What are its applications. [7M]
   b) Explain insertion and deletion operation in Mintree. [7M]

UNIT-IV

7. a) Define AVL tree? Convert the following diagrams into Balanced AVL trees [7M]



   b) Write an algorithm to perform insertion in B-trees and explain it with an example. [7M]

(OR)

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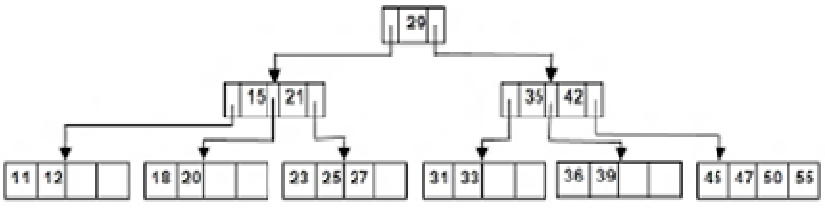
8. a) Explain double rotations in AVL Trees. [7M]

   b) Explain the procedure to delete 11,12,15 and 21 from the following B-tree of order 5. [7M]



B-Tree of order 5

UNIT-V

9. a) What is red black tree, discuss its properties. [7M]

   b) Explain deletion operation in scape goat trees with an example [7M]

(OR)

10. a) Explain about the array representation of priority queues with an example. [7M]

    b) What are the operations of priority queue? [7M]