

MCA- SEM II (CBAS)
Data Structure

18/5/16
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QP Code : 26676

(3 Hours)

[Total Marks : 80]

Note: - 1) Question no. 1 is compulsory **muadda.com**
2) Attempt any **four** from remaining Q.no.2 to 7

1.

(a). Define an AVL tree. What is the need of balancing a binary search tree? Write an algorithm to rotate AVL tree Left and illustrate with the help of example. [10]

(b). Give the algorithm for quick sort and explain the algorithm for following data:
81, 94, 11, 96, 12, 35, 17, 95, 28, 58, 41, 75, 15 [10]

2.

(a). What is a Stack? Explain working of stack with suitable example and give the algorithms for push, pop, stack full and empty. **muadda.com** [08]

(b). What is Algorithm analysis? Explain the concept of Big-O Notation. [07]

3.

(a). What is a doubly linked list? Write algorithms for [08]
i) Adding a node in doubly linked list
ii) Searching a node in doubly linked list

(b). Define an expression tree? Write an algorithm to convert an infix expression to postfix expression. [07]

4.

(a). What is a Heap tree? Construct heap tree and apply heap sort for the following data values.
49 6 46 82 9 55 4 90 12 2 [08]

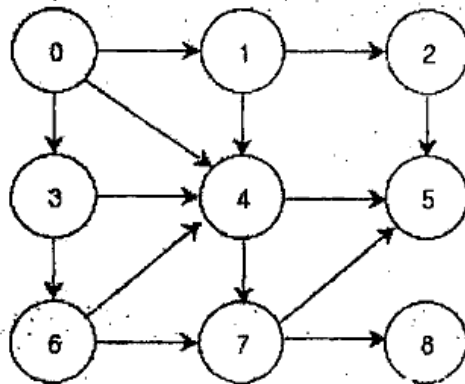
(b). Define Binary Search tree. Write the algorithms for: [07]
i) Inserting an element in BST
ii) Finding the maximum element from the BST.

[TURN OVER]

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5.

(a). Define a graph. Give the breadth first traversal for following graph. Also write the algorithm for the same. [08]



(b). Define a minimum spanning tree. Explain Prim's algorithm with suitable example. [07]

6.

(a). Explain the following:

- i) Backtracking
- ii) Priority queue

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[08]

(b). Define B-tree. Build a B-tree of order 5 by inserting the following data in sequence: 80 21 4 6 5 17 1 20 13 15 16 75

[07]

7. Explain the following terms:

[15]

- a. Mid Square Method
- b. Binary Search Technique
- c. B* Tree

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