

Day: Wednesday
Date: 14/11/2018

W-2018-2353

Time: 02.30 PM TO 05.30 PM
Max. Marks: 60

N.B:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagrams **WHEREVER** necessary.

Q.1 Define algorithm and state its properties. Explain how algorithm is analyzed for its performance with the example of Binary Search Tree. (10)

OR

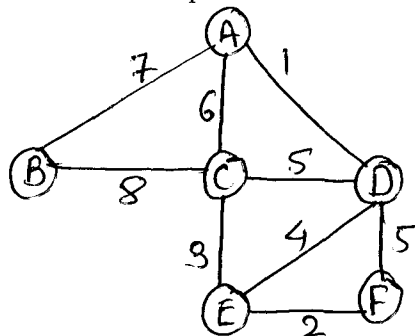
Q.1 Describe the factors to be considered for analysis of algorithm. Write a 'C' function for bubble sort and compute its time complexity. (10)

Q.2 Write down properties of Red-Black tree. How Red-Black tree is efficient compared to AVL and BST. (10)
Construct Red-Black tree for following Data sequence:
10, 2, 5, 17, 33, 29, 58, 4, 16, 22.

OR

Q.2 Define Threaded Binary Tree (TBT). Write 'C' code to construct TBT. (10)

Q.3 Construct minimum cost spanning tree using Prim's algorithm. Also find its cost with all intermediate steps: (10)



OR

Q.3 Write an algorithm for Graph traversals: Depth first Search and Breadth First Search. (10)

P.T.O.

Q.4 Which is the efficient string matching algorithm in usual application? (10)
Explain the Boyer-Moore algorithm.

OR

Q.4 Consider the string $T = "A B C A B C D A B A A B C D A B C D A B D C"$. (10)
Find step by step the number of concurrence of the pattern
 $P = "A B C D A B D"$
Using Knuth-Morris-Pratt (KMP) string searching algorithm.

Q.5 What is External Sorting? Explain Polyphase Merge sorting with suitable example. (10)

OR

Q.5 Define Priority Queue. Write ADT for Priority Queue. Also, write function to insert and delete operation in Priority Queue. (10)

Q.6 Explain the matrix chain multiplication using Dynamic Programming. (10)

OR

Q.6 What is Dynamic Programming? How it differs from Divide and Conquer? (10)
Explain the development of Dynamic Programming algorithm that can be broken into sequence of steps.

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