B. Tech- sem-IV, (2014, course), IT
winter- 2018

B.Tech. SEM -IV Info. Tech. 2014 Course (CBCS) : WINTER - 2018

SUBJECT: ADVANCED DATA STRUCTURE

Day: Wednesday **W-2018-2353** Time: 02.30 PM TO 05.30 PM
Date: 14/11/2018 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 it's performance with the example of Binary Search Tree. **(10)**

OR

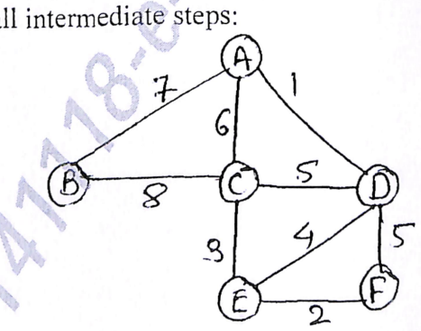
Q.1 Describe the factors to be considered for analysis of algorithm. Write a 'C' function for bubble sort and compute it's time complexity. **(10)**

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 it's 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? Explain the Boyer-Moore algorithm. **(10)**

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". 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. **(10)**

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? Explain the development of Dynamic Programming algorithm that can be broken into sequence of steps. **(10)**

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