IT 3 SEM DATA STRUCTURE AND ALGORITHM ANALYSIS OLD JUN 2016

QP Code : 28763   (3 Hours)   [Total Marks : 100

N.B. : (1) Question No.1 is **compulsory**.
   (2) Attempt **four** questions out of **remaining**.
   (3) **Figures** to the **right** indicate **full marks**.

1. (a) Distinguish between data type and data structure.   5
   (b) Explain Vector with atleast five methods.   5
   (c) What is Recursion? Give disadvantages of recursion. Write a program   10
      to implement Tower of Hanoi.

2. (a) Write a program to implement Queue using array.   10
   (b) Write an algorithm and explain with example Merge sort method.   10

3. (a) Write any pattern matching algorithm and explain with suitable example.   10
   (b) Implement a function to delete a node from Binary Search Tree. (Consider   10
      all possible Cases).

4. (a) Given an 'INFIX' expression, Write a program to convert it into its   10
      'POSTFIX' form.
   (b) Write algorithm for Heap Sort explain ascending heap with suitable example.   10

5. (a) Compute the minimum spanning tree for the given graph using Kruskal's   10
      Algorithm.   10
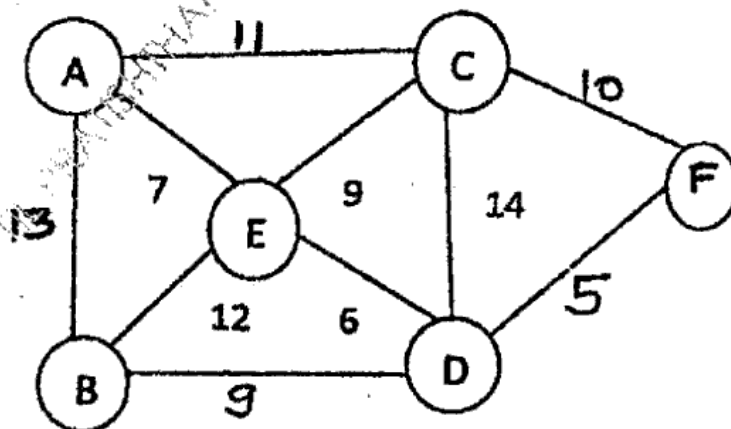
   (b) Write a program to search an element in an array using Binary Search   10
      Technique.

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6. (a) What is Doubly Linked List? Write an algorithm to implement following 10 operations with DLL :
   (i) Insertion (All Cases)
   (ii) Traverse (Forward and Backward)
   (b) Hash the following in a table size of 11. Use any two collision resolution 10 techniques 99, 67, 41, 0, 17, 2, 98, 20, 27, 94, 56.

7. Write short notes on any **four** of the following with examples : 20
   (a) Selection Sort
   (b) Comparison of sorting algorithms
   (c) B Trees
   (d) Graph traversal techniques
   (e) AVL Tree

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