SE- Sem III [CBSGS] ~~EXTC~~ IT

Data Structure & Algorithm Analysis

26 May 2015

Q.P. Code : **4926**

(3 Hours) [Total Marks : 80

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **three** questions out of remaining.
(3) **Figures** to the **right** indicate **full** marks.
(4) **Assume** suitable **data** if **necessary**.

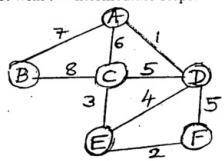
1. (a) Explain Asymptotic Notations. 3
   (b) What is linked list? State the advantages of linked list. 3
   (c) Define Double Ended queue. List the variants of Double ended queue. 3
   (d) Define Graph. list its types with example. 3
   (e) State the properties of Red Black Tree. 3
   (f) Explain with example. 3
   (i) Degree of tree (ii) Height of tree
   (g) Distinguish between linear data structure and non linear data structure. 2

2. (a) Write a program to implement STACK ADT using array. 10
   (b) Write an algorithm to implement Quick sort. Explain with an example. 10

3. (a) Define binary search tree. Write algorithm to implement insertion and deletion operation. 10
   (b) Give an INFIX expression and write a program to convert it in POSTFIX expression. 10

4. (a) Write a program to sort an array using insertion sort algorithm. 10
   (b) What is AVL tree?Construct AVL tree using following sequence of data : 10
   16, 27, 9, 11, 36, 54, 81, 63, 72

5. (a) Find the minimum spanning tree for the given graph using Kruskal's algorithm. 10
   Also find its cost with all intermediate steps.



   (b) Write functions to implement insert () and traverse () of singly linked list. 10

6. a) Write algorithm to traverse a graph using: 10
   (i) Breadth First Search (ii) Depth First Search
   (b) What is priority queue? Give implementation of it. 10

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