S.E. I.T. Sem III (CBGS). 3/12/15

Data structure and Algorithm Analysis.

QP Code : 5180

(3 Hours) **[Total Marks : 80**

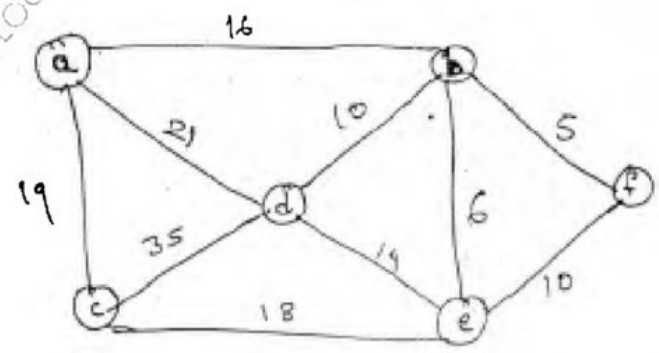
N.B. : (1) Question No. **1** is **compulsory.**
(2) Answer **any three** out of remaining questions.
(3) Assume suitable data if necessary.
(3) **Figures** to the **right** indicate **full** marks.

1 (a) Explain with example 3
(i) Degree of tree
(ii) Height of tree
(iii) Depth of tree
(b) What is linked list? Give its applications. 3
(c) Define Graph. List the types Graph with example. 3
(d) What is Asymptotic Notations. 3
(e) Write down the properties of Red-Black tree. 3
(f) What are linear and non-linear data structures. 3
(g) Define minimum spanning tree. 2
List the techniques to compute minimum spanking tree.

2 (a) Write a program to implement Queue ADT using array 10
(b) Define Binary search tree. Write an algorithm to implement Insertion and Deletion Operation. 10

3. (a) Write a program to convert INFIX expression into POST FIX expression. 10
(b) Define AVL tree? Construct AVL tree for following data [Mention type of rotation for each case] 10
1, 2, 3, 4, 8, 7, 6, 5, 11, 10, 12

4. (a) Using Prim's and kruskal's algorithm find minimum spanning tree for the following Graph 10



[TURN OVER]

(b) Write an algorithm to implement shell sort. 10

5. (a) Write a program to create singly linked list and display the list. 10
   (b) Explain BFS and DFS algorithm with example. 10
   20

6. Write short note on **any four**
   (a) B- Tree
   (b) Red Black Trees
   (c) Searching Algorithms
   (d) Sparse Matrix
   (e) Euclids algorithm
   (f) Merge Sort
