

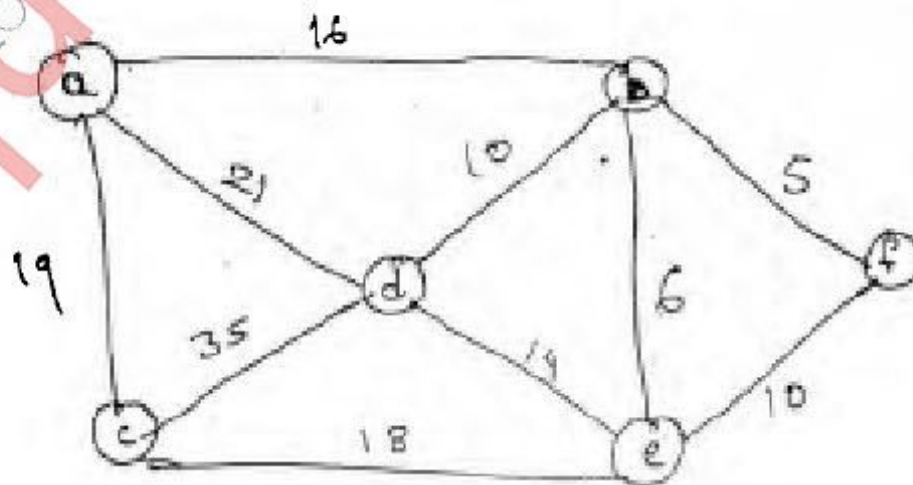
QP Code : 5180

(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 spanning 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
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