

(3 hours)



Q. P. Code: 22955

[80 marks]

NOTE: Question No 1 is compulsory

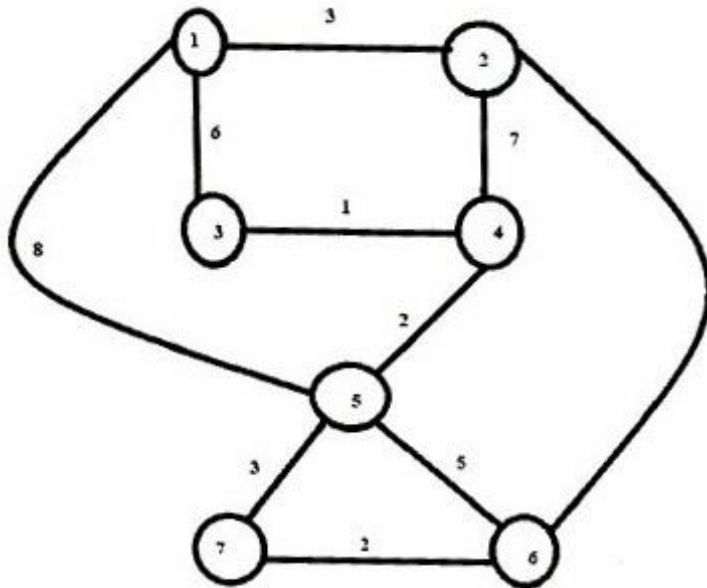
Attempt any three questions from remaining. Assume suitable data if necessary.

Figure indicate full marks

- Q1. A) Define Data structure and Abstract Data Type? 2
- B) What do you mean by asymptotic notations? Explain with the help of example. 3
- C) What is recursive function? Explain how it works using proper example. 3
- D) Define Stack? List the applications of Stack? 3
- E) List the properties of Red-Black Tree. 3
- F) Define Graph. What are the methods to represent graph. 3
- G) What is Linked List? State the advantages of Linked List. 3
- Q2. A) Write a program to implement Queue using array. 10
- B) Illustrate the deletion operation in a binary heap with examples. 10
- Q3. A) Write an algorithm for Quick sort and Merge sort. 10
- B) Define AVL Tree? Create an AVL tree using the following sequence
(Mention type of rotation for each case.)- 16,27,9,11,36,54,81,63,72 10
- Q4. A) Write a functions to implement insert (), delete () and traverse ()
for singly linked list. 10
- B) Write a program to implement a Stack ADT using Linked List? 10

TURN OVER

Q5. A) Find Minimum spanning tree for following graph using Prim's and Kruskal's Algorithm. Show all the steps. 10



B) From a binary max-heap and min-heap from the following sequence of data-
50,40,35,25,20,27,33 10

Q6. Write Short note (Any Four) 20

- a. Euclid's Algorithm
- b. Huffman tree
- c. Sparse matrix
- d. Breadth First Search Algorithm
- e. Circular Queue
- f. Bubble Sort
