

(OLD COURSE)

(3 Hours)

Total Marks: 100

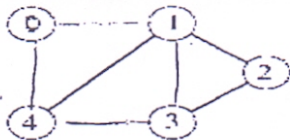
- N.B. (1) Question No. 1 is Compulsory.  
 (2) Attempt any 4 questions out of the remaining six questions  
 (3) Assume any suitable data wherever required but justify the same.  
 (4) Use diagrams wherever necessary

- Q1. a) What are different methods to represent graph in memory? Explain in detail. 10  
 b) Explain the terms Data structure and ADT with examples. 10

- Q2. a) Write a program in Java to implement stack using an array or linked list. Provide push, pop, stack top and display operations. 10  
 b) Write a Java program to implement insertion Sort. Explain the same with example. 10

- Q3. a) Write a program in Java to delete a node. Consider all cases. 10  
 b) What is a priority queue? Explain with example. 10

- Q4. a) Provide adjacency matrix and adjacency list representation of the following graph



5

- b) Write a Java program for singly circular linked list. Provide the following operations: 10  
 Insert at beginning, remove from beginning, search and traverse.  
 c) Explain recursion with examples. 5

- Q5. a) Write a Java program for Binary Search Tree pre-order traversal. 10  
 b) Explain Huffman coding. For the following set of values and their frequencies construct Huffman tree and find Huffman code for each value. 10

FREQUENCY	VALUE
5	1
7	2
10	3
15	4
20	5
45	6

- Q6. a) Explain any two collision resolution techniques with example. 10  
 b) Explain prefix, postfix and infix notations with examples. 10  
 Explain conversion of infix expression to postfix expression with an example

- Q7. Write short notes on any 4 20  
 1. AVL tree and multiway trees  
 2. sequential files  
 3. Circular queues.  
 4. B-Tree  
 5. Hashing