

- N.B. :** (1) Question No. 1 is **compulsory**.  
(2) Attempt any **four** question from Q. No. 2 to 7.  
(3) Use **diagrams** wherever **necessary**.  
(4) Assume **suitable** data wherever **required** but **justify** the same.

1. (a) Explain different types of data structure with example. 05  
(b) Write recursive java method that finds minimum and maximum values in an array of int values without using any loops. 05  
(c) Define i) Abstract Data Type ii) Binary Tree iii) Graph. 05  
(d) Write short note on Priority queue. Explain with example. 05
2. (a) Write a program in java to delete a node from the given binary search tree. 10  
Consider all cases.  
(b) write a program in java to perform Insertion sort. 10  
Sort the following using insertion sort  
10, 3, 8, 4, 2
3. (a) Construct binary tree for the preorder and inorder traversal sequences 10  
Given below.  
Preorder : A B D G C E H I F  
Inorder : D G B A H E I C F
- (b) Write a program which will read a text and count all occurrences of particular word. 10
4. (a) Write a program to reverse the circular linked list. 10  
(b) Hash the following in a table of size 11. Use any two collision resolution techniques. 10  
23, 0, 52, 61, 78, 33, 100, 8, 10, 90, 14
5. (a) Write a program in java to create a doubly linked list and perform following 12  
Operations.  
i) Insert Into list ii) Search for data iii) Delete from list iv) Display
- (b) What are different methods to represent graph in memory? 08  
What are applications of graph. 10

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- (b) Hash the following in a table of size 11 .Use any two collision resolution techniques 10  
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- 5 (a) Write a program In java to create a doubly linked list and perform following 12  
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What are applications of graph.
- 6 (a) Write a program to Implement conversion of a given number to its equivalent 10  
Binary form using stack.
- (b) Write a program in java to read data from file .Read file name from command line. 10
- 7 Write notes on: 20
- (a) AVL Tree
- (b) Array Representation of linked list
- (c) Binary Search
- (d) Graph traversal algorithms