

QP Code : NP-18681

(3 Hours)

[ Total Marks :80

- N.B. :** (1) Question no. 1 is **compulsory**.  
 (2) Solve any 3 questions from remaining questions.  
 (3) Assume suitable data wherever **necessary**.

1. (a) Explain different types of data structures with example. 5  
 (b) Write recursive & non-recursive functions to calculate GCD of 2 numbers. 5  
 (c) Show with example how graphs are represented in computer memory. 5  
 (d) Discuss practical application of trees. 5
2. (a) What is hashing? What is mean by collision? Using modulo division method & linear probing, store the values given below in array with 10 elements. 10  
 99      33      23      44      56      43      19.  
 (b) Write a program in 'C' to convert infix expression to postfix expression using stacks. 10
3. (a) Write a program in 'C' to perform Quick sort. show steps with example. 10  
 (b) Write a program in 'C' which will read a text and count all occurrences of a particular word. 10
4. (a) Write a program in 'C' to implement circular queue using Link-list. 10  
 (b) Construct Binary tree for the pre order & Inorder traversal sequences: 10
- |           |   |   |   |   |   |   |   |   |   |
|-----------|---|---|---|---|---|---|---|---|---|
| Preorder: | A | B | D | G | C | E | H | I | F |
| Inorder:  | D | G | B | A | H | E | I | C | F |
5. (a) Write a program in 'C' to implement Doubly Link-list with methods insert, delete and search. 10  
 (b) Write a program in 'C' to implement Binary search on sorted set of integers. 10
6. Write short note on:—
- (a) Discuss Threaded Binary tree in detail. 10  
 (b) Explain BFS algorithm with example. 10