

Roll No.

Total No. of Pages : 2

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B.Tech. (CSE/IT) (Sem.-3)

DATA STRUCTURES & PROGRAMMING METHODOLOGY

Subject Code : CS-207

Paper ID : [A0454]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

- 1. SECTION-A is COMPULSORY.**
- 2. Attempt any FOUR questions from SECTION-B.**
- 3. Attempt any TWO questions from SECTION-C.**

SECTION-A (10 × 2 = 20 Marks)

- (a) Distinguish between BFS and DFS.

(b) What are variable length records?

(c) What are priority queues? How they are implemented?

(d) What do you mean by non linear data structure? Give example.

(e) Discuss how graphs are represented in memory using linked list?

(f) What is hashing?

(g) Write a recursive function to calculate factorial.

(h) What are threads?

(i) What are the limitations of linked lists?

(j) What is adjacency matrix representation of a graph in memory?

SECTION-B (4 × 5 = 20 Marks)

- Sort the following list of elements using Bubble Sort:

98 89 44 7 5 35 12 100 2 57

What is its complexity?
- How 2-dimensional arrays are represented in memory? For A(1:5,-5:5,10:15), Find LOC(A[3,3,13]), assume Base(a)=400 and there are 4 memory

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locations per word.

4. Write an algorithm for linear search. Also write its complexity.
5. What are different file organisations? Write a program in C++ to write into the file.
6. What is Big 'O' notation? Explain its significance.

SECTION-C

(2 × 10 = 20 Marks)

7. What are Binary trees? What are different ways of traversing a binary tree?
8. Design a heap tree from following sequence of nodes.
43 29 59 20 48 53 75 51 18 31 46 and then delete the root node
9. Write an algorithm to convert infix expression to postfix expression. Give example and apply on algorithm.