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Total No. of Questions : 09] [Total No. of Pages : 02

Paper ID [CS207]

(Please fill this Paper ID in OMR Sheet)

MAY-08

B.Tech. (Sem. - 3rd)

DATA STRUCTURES AND PROGRAMMING METHODOLOGY

(CS - 207)

Time : 03 Hours Maximum 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

Q1) *(10 × 2 = 20)*

a) What do you mean by linear data structure? Give examples.

b) Describe briefly the different types of structures used for storing strings.

c) What will be the complexity of the linear search algorithm for both the worst case and average case?

d) How linked lists are represented in memory?

e) Write any two applications of stack.

f) What is the difference between record and linear array?

g) What is header linked list?

h) Write the prefix notation for the expression:

(A+B)*C–(D–E)^F

i) What is the difference between stack and queue.

j) What is the intersection of the sets A={1, 1, 2, 7} and B={0, 1, 3, 4}.

Section - B *(4 × 5 = 20)*

Q2) Write an algorithm for Binary search.

Q3) Write an algorithm for insertion of an item after the given node in the linked list.

Q4) What is recursion? Write a recursive procedure to compute the factorial of a given number.

Q5) What is a file? Write a program in your known computer language to store and retrieve records in/from a file.

Q6) Sort the following list of numbers.

32, 51, 27, 85, 66, 23, 13, 57

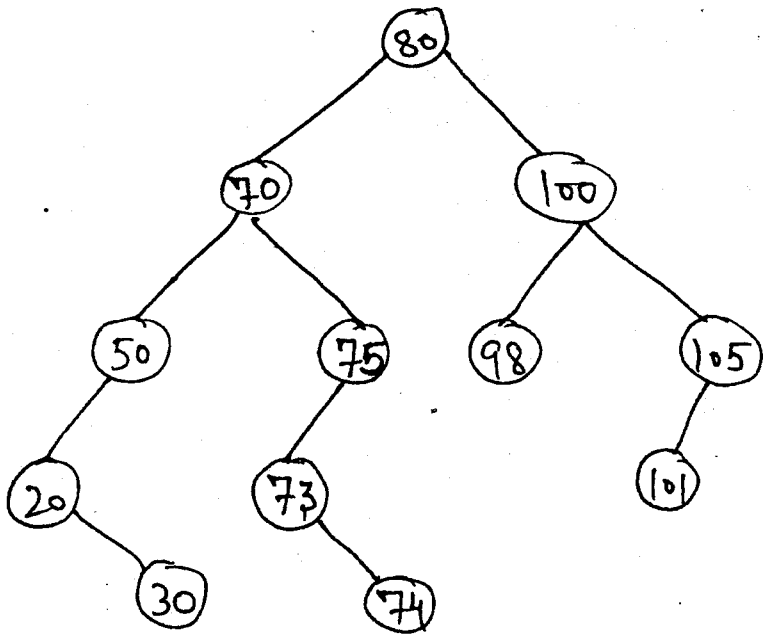
Using Bubble sort algorithm.

Section - C *(2 × 10 = 20)*

Q7) How graphs are represented in memory? Write a procedure to delete a node from the graph.

Q8) What is hash function? Explain any two hash functions with at least one example each. Write their advantages as well as disadvantages.

Q9) Write a procedure for inorder traversal of a binary tree. What will be inorder and post order traversals of following binary tree?



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