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MCA-06/PGDCA-06/M.SC (IT)-06

Data Structure through C Language

Master of Computer Application/P.G.Diploma in Computer Application/Master of Science in Information Technology (MCA/PGDCA/MSc.IT-11/12/16/17)
Examination 2021 (Winter)

Time : 2 Hours **Max. Marks:80**

Note : This paper is of eighty (80) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section-A

(Long Answer-type questions)

Note: Section 'A' contains Five (05) long-answer-type questions of Twenty (20) marks each. Learners are required to answer any two (02) questions only.

(2 x 20=40)

Q.1 Write an algorithm to create a Linked List? Also write a function to delete a node in the linked list.

P.T.O.

Q.2 What is binary tree? A binary tree T has 9 nodes. The inorder and preorder traversals of T are following :

Inorder : E A C K F H D B G

Preorder : F A E K C D H G B

Construct the tree.

Q.3 What is the best case complexity of quick sort and outline why it is so? How the quick sort processes the list 42, 34, 75, 24, 19, 18, 103, 72 in order to sort it in the descending order.

Q.4 A double ended queue is a linear list where additions and deletions can be performed at either end. Represent a double ended queue using an array to store elements and write modules for additions and deletions?

Q.5 What is Adjacency Matrices? What are the different graph Traversal schemes? Write the algorithm for different graph traversal scheme.

Section-B

(Short Answer-type questions)

Note: Section 'B' contains Eight (08) short-answer-type questions of Ten (10) marks each. Learners are required to answer any four (04) questions only.

(4 x 10=40)

Q.1 Explain one dimensional and two dimensional array. How they are implemented?

Q.2 What do you mean by Time Complexity of an algorithm? Explain with example.

Q.3 Write PUSH () and POP () operations of stack.

Q.4 What is Bubble sort? Explain by giving an example.

Q.5 What is the difference between general tree and binary tree? Explain.

Q.6 What is sequential search? Explain by giving suitable example.

Q.7 Write a program in C to search an element in an array using Binary Search.

Q.8 Write a program in C to insert and delete elements from queue.

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