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19/4th Sem/DCSE 401

2022

DATA STRUCTURE USING C

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) Write a program in C that replaces a given character with another character in the string. 10

   (b) Why do you need array ? How is an array represented in memory ? 10

2. (a) Which technique of searching an element in the array do you prefer to use and in which situation ? Give examples. 10

   (c) Write a program in C to find the largest element in an array using pointer. 10

3. (a) Is it possible to create an array of structures ? Explain with the help of an example. 10

   (b) Write a program to read and display the information about a student using nested structure. 10

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4. (a) Write an algorithm to insert new node at the beginning, at the middle position and at the end of a singly linked list. 10

(b) Why do you have to check the full and empty conditions of a stack ? Write the algorithm to perform insertion and deletion in stack. 10

5. (a) Explain the insertion sort algorithm with example. What are the advantages of insertion sort algorithm over other sorting algorithms ? 10

(b) Apply the quick sort algorithm on the following list of 12 numbers and clearly show each steps :

34, 11, 9, 7, 18, 23, 8, 97, 66, 10, 12, 13 10

6. Write short notes on : 20

(a) Queue

(b) Selection Sort Algorithm

(c) Binary Tree

(d) Hashing.

7. Write the algorithms to delete a node from a linked list at various positions. Explain with examples. 20