Name: Student University Roll No.:	Printed Pages: 1

School of Engineering
First Sessional Examination, Even Semester (AS: 2023-24)
B. Tech: CSE, CSE(CCML), CSE(IOTBC)

Year: II Semester: IV

Course Title: Data Structure using C Course Code: BCS3403	M.M.: 30 Time: 1 *hr*

Attempt all questions

SECTION 'A' Q.N.1. Attempt all parts of the following:		Course Objective	Marks
a)	Differentiate between linear and non-linear data structure.	CO1	1
b)	What are disadvantages of array data structure?	CO1	1
c)	Find complexity of given equation in term of big-oh(O). $F(n) = 3n^2-n+4$	CO1	1
d)	What is an abstract data type?	CO1	1
e)	Write Formula to find address of an element using column major order in 2D array.	CO1	1

SECTION 'B' Q.N.2. Attempt any two parts of the following:		Course Objective	Marks
a)	What is tail recursion? Discuss with example.	CO1	7.5
b)	Given an array, arr[1...10][1...15] with base value 100 and the size of each element is 1 Byte in memory. Find the address of arr[8][6] with the help of row-major order.	CO1	7.5
c)	Write algorithm to delete an element from an array.	CO1	7.5
d)	Explain Linear and non-linear data Structures with examples.	CO1	7.5

SECTION 'C' Q.N.3. Attempt any one part of the following		Course Objective	Marks
a)	Write algorithm for Tower of Hanoi problem. Solve and write the sequence of moves for no of plates n=3.	CO1	10
b)	Write a Program to find Product and Summation of diagonal elements of (n X n) Matrix.	CO1	10
c)	Explain concept of Sparse Matrix. How can you represent sparse matrix in memory.	CO1	10

Table 1: Mapping between COs and questions

(Number of COs may vary from course to course)

COs	Questions Numbers	Total Marks
CO1	Q1 a), b), c), d), e), Q2 a), b), c), d), Q3 a). b). c)	65

for
Neeti