M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)

DEPARTMENT OF CSE

Tutorial / Assignment Sheet No. : 1.1

Branch / Semester: CSE-C /3rd **Course Name:** Data Structures & Algorithms **Course Code:** BCSE-502

Topics covered: Data Structure Operations Analysis of an Algorithm, Asymptotic Notations, Time-Space trade off, Arrays, Sparse Matrix, Searching

Date of Release:29/09/2021 **Last date of submission:06/10/2021** **Total Marks:** 25

Assignment Outcomes:

i) To impart the basic concepts of data structures and algorithms.
ii) To understand and remember algorithms and its analysis.

Q. No.	"All Questions are compulsory"	Marks
	Section-A (Each question of 1 mark)	5
1.	What is the need of Data Structure?	
2.	What do you mean by complexity of an algorithm?	
3.	What are different operation performed on Data Structure?	
4.	Explain worst case scenario with example.	
5.	How will you calculate the size of 1-D array?	
	Section-B (Each question of 2 mark)	6
6.	Differentiate between row-major and column-major representation of array.	
7.	Let A be a two-dimensional array declared as follows: A: array [1 …. 10] [1 …… 15] of integer; Assuming that each integer takes one memory location, the array is stored in row-major order and the first element of the array is stored at location 100, what is the address of the element A[i][j]? (a) 15i + j + 84 (b) 15j + i + 84 (c) 10i + j + 89 (d) 10j + i + 89	
8.	Differentiate between Linear Search and Binary Search based on their complexities.	
	Section-C (Each question of 4 mark)	8
9.	Differentiate between Iteration & Recursion with suitable example.	
10.	Write the program to check whether a matrix is sparse or not?	
	Section-D (6 mark question)	
11.	An array A[-25.....20,5.....20] required Two byte of the storage and the beginning location is 2500 s So determine the location of A[5][20] using Row-Major and Column Major Representation.	6

Note for students: Students are required to submit handwritten solutions of given assignment / tutorial sheet on or before Last date of submission otherwise penalty in terms of deduction in marks will be made as per following rule:

If submitted on or before last date then Deduction of marks = 0
If submission delayed by (1-7) days then Deduction of marks = 5
If submission delayed by (8-14) days then Deduction of marks = 10
If submission delayed by more than 15 days then Deduction of marks = 12.5