PRN:		Course Code :	MCA104

Second-Year **M.C.A.** End Semester Examination Winter 2022

Data Structures and Algorithms

Day and Date: Thursday 15/12/22 Max Marks: **100**

Time : 10:30AM to 1:30PM Duration: **03** hrs

Instructions: All questions are compulsory.

			Marks	Bloom's Level	CO
Q.1		**Attempt the following**			
	a)	Illustrate Big O notation with example	08	L3	CO1
	b)	Explain Binary Search trace the given Array	08	L2	CO1

42	48	8	5	4	23	38	40	78	43

And Search element 40.

OR

	b)	Illustrate term Sequential search with its algorithm & Logic	08	L3	CO1
Q.2		**Attempt the following**			
	a)	Difference Between Linear Data Structure and Non-Linear Data Structure	08	L3	
	b)	Discuss Selection Sort with Suitable example	08	L3	CO2
		OR			
	b)	Differentiate in between Merge Sort and Quick sort	08	L4	CO2
Q.3		**Attempt any two from the following**			
	a)	Solve given infix equation into prefix A+(B^R)-D*E-(A-R)	08	L5	CO3
	b)	Discuss linear data structure, explain LIFO technique	08	L3	CO3
	c)	Make a use of Queue with its operation	08	L3	CO3
Q.4		**Attempt any two of the following**			
	a)	Illustrate Sparse Matrix with its two types.	08	L3	CO3
	b)	Explain topological sort.	08	L2	CO3
	c)	Construct graph with suitable example also design sequential representation of it.	08	L6	CO3
Q.5		**Attempt any Two of the following**			
	a)	Explain Divide and Conquer concept	09	L2	CO3
	b)	Differentiate Binary tree and Optimal binary tree.	09	L4	CO3
	c)	Determine transitive closure using Warshalls Algorithm.	09	L3	CO3
Q.6		**Attempt any Two of the following**			
	a)	Differentiate N problem and NP problem	09	L4	CO4
	b)	Illustrate NP complete problem.	09	L3	CO4
	c)	Discuss Travelling Salesman problem	09	L3	CO4

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Backlog