Total number of printed pages: **Programme(UG)/4th Sem (Back)/UCSE504**

2024

Data Structure & Algorithm

Full Marks: 100

Time: Three hours

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

*Answer **any five** questions.*

1.	a)	Purpose of data structure is to (learn Programming, learn Algorithm, learn how to store and organized data, related to AI) ……	10 x 2
	b)	The disadvantages of arrays is (indexed access, sequential in nature, need to declare earlier without knowing the size) ……	
	c)	Suitable data structure for recursion is (Array, Stack, Queue, List) ……	
	d)	Suitable data structure to check the balanced parenthesis is (Array, Stack, Queue, List) ……	
	e)	The non-linear data structure is (Array, Stack, Queue, Tree) ……	
	f)	The value of the postfix expression 6 3 2 4 + – * is (-18, 74, 40, 22) ……	
	g)	First In First Out (FIFO) principle follow in (Stack, Queue, Tree, List) ……	
	h)	The postfix form of 6 *{3 - (2+ 4)} is ……	
	i)	The time needed to read a list id (O(n), n, $O(n^2)$, none) ……	
	j)	A stack is initially empty and perform the operations ***push(5), push(5), pop(), pop()***. After the operation the stack will contain (nothing, 5, 25, 55) ……	
2.	a)	Define Array. Write the advantage and disadvantage of the Array.	3 + 7
	b)	How to implement a queue using Array. Write the operations on queue.	5 + 5
3.	a)	Describe the ***push()*** and ***pop()*** operations for a stack.	5 + 5
	b)	Define recursion. Write a recursive function for ***n!***.	3 + 7
4.	a)	Write any forting algorithm. What is the time complexity of your algorithm?	15 + 5
5.	a)	Define two dimensional array. Write a C-program / pseudo code to add two matric.	5 + 15
6.	a)	Define graph. What is the difference between graph and tree?	3 + 4
	b)	What do you mean by graph traversal? Write the Depth First Search algorithm	3 + 10