

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

MCA DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

First Semester

Master of Computer Applications

PMCVA101 - Data Structures and Algorithms

Regulations - 2024

Duration : 3 Hrs

Maximum : 100 Marks

PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Define an abstract data type.	RE	1	2
2.	Define array and its representation.	RE	1	2
3.	List the applications of stack.	RE	2	2
4.	Distinguish between stack and queue.	UN	2	2
5.	What are the types of linked lists?	RE	3	2
6.	What are the advantages in the array implementation of list?	RE	3	2
7.	Differentiate between merge sort and quick sort.	UN	4	2
8.	Define hash function.	RE	4	2
9.	Define complete binary tree.	RE	5	2
10.	Label tree- traversal and mention the type of traversals?	RE	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Describe in detail about fundamentals of algorithmic problem solving.	UN	1	13
	Or			
	b Explain asymptotic notation in detail.	UN	1	13
12.	a i Construct stack ADT and its operations.	AP	2	9
	ii Convert the infix $(a+b)*(c+d)/f$ into postfix & prefix expression.	RE	2	4
	Or			
	b i What are enqueue and dequeue operations?	RE	2	4
	ii Construct the addition and deletion operations performed on a circular queue with necessary algorithms.	AP	2	9
13.	a Identify the steps involved in insertion and deletion into a singly and doubly linked list.	AP	3	13
	Or			
	b Discover how polynomial manipulations are performed with lists? Explain the operations.	AN	3	13

14.	a	Develop a program to perform searching operations using linear and binary search.	AP	4	13
		Or			
	b	Develop an algorithm to sort the elements using bubble sort.	AP	4	13
15.	a	Illustrate binary tree traversals in detail.	UN	5	13
		Or			
	b	Explain depth first and breadth first traversal.	UN	5	13

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Classify Re-Hashing and Extendible Hashing.	AN	3	15
		Or			
	b	Analyze the various applications of graphs explain in detail	AN	4	15