

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***MCA DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***First Semester**Master of Computer Applications***PMCVA102 - Problem Solving and Programming in C***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 the term: Program and Bug.	L1	1	2
2.	Distinguish between algorithmic and heuristic approach of problem solving.	L2	1	2
3.	Draw the flowchart for finding sum of even natural numbers from m to n.	L2	2	2
4.	Write a pseudocode to find the sum and average of two numbers.	L2	2	2
5.	Give the structure of C program in a neat sketch.	L1	3	2
6.	Define type conversion. Give the two types of type conversion in C.	L1	3	2
7.	Find errors in the following function calls: a) void xyz(); b) xyzz(); c) xyx(void); d) xyx(int x, int y);	L3	4	2
8.	Write a C program to read and display multiple strings using pointers.	L3	4	2
9.	Define Null pointers.	L1	5	2
10.	Identify how whether mat[i][j] is equivalent to *(* (mat+i)+j).	L2	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i Explain in detail about the six problem solving steps in computer.	L2	1	8
	ii Discuss the role of functions in program design and development. How do functions facilitate modularity and code reuse in problem-solving?	L2	1	8
	Or			
	b i Describe the top-down design approach in problem-solving, emphasizing the hierarchy of tasks and the importance of decomposition.	L2	1	8
	ii How the efficiency of algorithm is measured explain with the cases of Complexity.	L2	1	8

12.	a	i	Provide an example of pseudo code for a simple algorithm, such as calculating the average of a list of numbers.	L2	2	8
		ii	Explain the purpose of pseudocode in algorithm design. Provide an example of an algorithm expressed in pseudocode and describe the advantages of using this notation.	L2	2	8
	Or					
	b	i	Discuss the significance of flowcharts in representing algorithms. Provide an example of a flowchart for a common algorithm and explain how it aids in understanding and communicating the algorithm's logic.	L2	2	8
		ii	Write an algorithm, flowchart and pseudo code to check the given number is odd or even.	L2	2	8
13.	a	i	Write a C program to read two number and check whether the first number is a multiple of second one.	L2	3	8
		ii	Explain the significance of using arrays in problem-solving and give an example of a real-life situation where arrays are useful.	L3	3	8
	Or					
	b	i	Write a short note on goto statement. As a programmer would you prefer to use this statement? Justify your answer.	L2	3	8
		ii	Write a C program to print the following pattern: * * * * * \$ \$ * * \$ \$ * * * * *	L3	3	8
14.	a	i	Write a C program to input an array of 10 numbers and swap the largest value with the smallest value in the array.	L3	4	8
		ii	Briefly describe the concept of pointer arithmetic in C. Provide an example scenario where pointer arithmetic is useful.	L2	4	8
	Or					
	b	i	Write a C program to compare the first n characters of one string with first n characters of another string.	L3	4	8
		ii	Describe the process of dynamic memory allocation using malloc in C. Provide an example code snippet demonstrating the allocation of an integer array.	L2	4	8
15.	a	i	Outline a structure type book, that would contain book name, author, pages and price. Write a program to read this data using member operator (.) and display the same.	L3	5	8
		ii	Discuss the advantages of using dynamic memory allocation in file processing.	L2	5	8
	Or					
	b	i	Write a C program to read name and marks of n number of students from user and store them in a file.	L3	5	8
		ii	Briefly describe the concept of pointer arithmetic in C. Provide an example scenario where pointer arithmetic is useful.	L2	5	8