

Register No : _____

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

MCA DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

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.	Mention the various problem-solving aspects.	RE	1	2
2.	List the fundamental algorithms with an example.	RE	1	2
3.	Differentiate Compiler and Interpreter.	UN	2	2
4.	Recall the classification of programming language	UN	2	2
5.	Differentiate consonants and variables.	UN	3	2
6.	Find the value of expression $5+3-10/2*5+10$.	AP	3	2
7.	Write a C program to find the length of a given string without using built-in function.	AP	4	2
8.	Write the syntax to create two-dimensional array. Give an example.	UN	4	2
9.	Distinguish between structure and union in C.	UN	5	2
10.	Interpret the purpose of command line argument in C.	UN	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 Explain in detail the various steps involved in top-down design of problem solving. Or	UN	1	13
	b Explain the concepts of time complexity and space complexity in algorithm analysis. Discuss how Big O notation is used to express these complexities, and provide examples for both.	UN	1	13
12.	a Draw a flowchart and write pseudocode to generate Fibonacci sequence of a given number. Or	AP	2	13
	b Write an algorithm to check whether a given number is Armstrong number or not and to find the factorial of a given number.	AP	2	13
13.	a i Explain the various conditional statements with suitable examples.	UN	3	7
	ii Write a C program to check whether the given number is prime or not.	AP	3	6

Or

- b i Explain different operators in C with suitable examples. UN 3 7
- ii Consider the following criteria to calculate electricity bill amount using C program. AP 3 6

Number of Units	Amount/Unit
<=100	Rs.3
>100 & <=200	Rs.4
>200 & <=500	Rs.8
>500	Rs.9

14. a i Write a C program to find the biggest and smallest number in an integer array. AP 4 8
- ii Outline various storage classes in C with an example. UN 4 5

Or

- b i Write a C program to swap the values of two variables using pass by value and pass by reference. AP 4 8
- ii Explain dynamic memory allocation with a suitable example. UN 4 5

15. a Create a structure named "student" which has the members such as name, rollno, marks in five subjects, gender, semester, total and average. Use array of structure to get and store the details of 'n' students. Write a C program to calculate the total and average of each student and display the details of all students. AP 5 13

Or

- b Write a C program to read a text file containing a list of numbers, calculate their average and write the result to a new output file using file handling function. AP 5 13

*PART – C (Marks 1*15 = 15)*

Q.No	Questions	BLT	CO	Marks
16.	a i Illustrate the different parameter passing mechanisms in functions with suitable examples.	UN	4	10
	ii Write a C program to calculate the factorial of a given number using recursion.	AP	4	5
	Or			
	b i Define pointer and mention its advantages. Provide an example C program that illustrates how to use pointers to implement call by reference in a function.	UN	4	10
	ii Write a C program to read a string from user and find the number of vowels, consonants and digits in the given string.	AP	4	5