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MANGALORE INSTITUTE OF TECHNOLOGY & ENGINEERING

(A Unit of Rajalaxmi Education Trust®, Mangalore)
Autonomous Institute affiliated to VTU, Belagavi, Approved by AICTE, New Delhi
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Model Question Paper

Computational Thinking and Programming

Time: 3 Hours (180 Minutes) **Max. Marks: 100**

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: RBT (Revised Bloom's Taxonomy) level, C: Course outcomes.

		Module -1	M	L	C
Q1	a.	Explain how thinking proceeds to problem solving. Describe the initial state, the end state and the mental operations that connect them, using an everyday example.	08	L2	CO1
	b.	Explain the four pillars of computational thinking with one example for each.	06	L2	CO1
	c.	Define Algorithm. Write an Algorithm to find area and perimeter of circle	06	L2	CO1
		OR			
Q2	a.	Describe the five steps of problem identification using systems thinking. Illustrate each step with the problem of falling attendance in a class.	08	L2	CO1
	b.	Explain the six characteristics of computational thinking	06	L2	CO1
	c.	Explain any 5 Symbols used in flowchart and Draw a flowchart to calculate area of triangle when three sides are given	06	L2	CO1
		Module- 2			
Q3	a.	Explain the basic structure of a C program with a neat diagram, describing every section. Illustrate with a program that displays a welcome message.	08	L2	CO2
	b.	Explain any six Operators in C with suitable example for each	06	L2	CO2
	c.	Develop a C program to find GCD of two numbers	06	L3	CO3
		OR			
Q4	a.	Define the rules for naming identifiers in C. Examine each of the following identifiers and determine whether it is valid or invalid. Justify your answer with an appropriate reason. (i) student_name (ii) @count (iii) _college2026 (iv) total salary (v) switch	08	L2	CO2
	b.	Explain the working of cascaded - if statement in C with a suitable example	06	L2	CO2
	c.	Develop a C program check a given number is prime or not.	06	L3	CO3
		Module – 3			
Q5	a.	What is an array? Explain methods for initialization of one dimensional array.	08	L2	CO2
	b.	Develop a C program to read two matrix, compute the sum and print the resultant matrix	06	L3	CO4
	c.	Develop a recursive C program to find factorial of a number	06	L3	CO4
		OR			
Q6	a.	Explain the following with example (i) Function with parameter and without return value (ii) Function without parameter and with return value	08	L2	CO2
	b.	Build a C program to Search a key element in an array using linear search	06	L3	CO4
	c.	Develop a C program to read the elements of a matrix, determine its transpose by interchanging rows and columns, and display both the original matrix and its transpose.	06	L3	CO4

Module – 4					
Q7	a.	What are Pointers? How are pointers declared initialized and accessed Explain with an example	08	L2	CO2
	b.	Develop a C program to read a string and determine whether it is a palindrome or not. Display an appropriate message indicating the result	06	L3	CO4
	c.	Develop a C program using pointers to compute the sum of all the elements stored in an array of integers	06	L3	CO4
OR					
Q8	a.	Explain the following built-in string manipulation functions with suitable example (i) strlen() (ii) strcat()	08	L2	CO2
	b.	Develop a C program to interchange the values of two numbers using call by value and call by reference technique	06	L3	CO4
	c.	Develop a C program to read a string and convert all uppercase alphabets to lowercase and lowercase alphabets to uppercase without using built-in string functions. Display the resulting case-converted string.	06	L3	CO4
Module – 5					
Q9	a.	Define Structures and explain with syntax how they are declared and initialized with an example	08	L2	CO2
	b.	Compare the file opening modes r, w, and a in C. Explain how each mode behaves when the specified file exists or does not exist.	06	L2	CO2
	c.	Design a C program that copies the content from one file to another allowing the user to input both the source file name and the target file name.	06	L3	CO5
OR					
Q10	a.	Explain the concept of a file pointer in C. Illustrate the syntax for declaring a file pointer and describe its role in file handling operations.	08	L2	CO2
	b.	Explain the concept of nested Structures with suitable example.	06	L2	CO2
	c.	Develop a C program to read a file character by character and display it on the screen.	06	L3	CO5

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