U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2025 Semester End Main Examinations

Programme: B.E. **Semester: I / II**

Branch: Common to all Branches **Duration: 3 hrs.**

Course Code: 21CC1ESPSP / 21CC2ESPSP **Max Marks: 100**

Course: Problem-Solving Through Programming

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	CO	PO	Marks
1	a)		Differentiate between the following (Any three differences) (i) Primary Memory & Secondary Memory (ii) System software & Application software	CO1	-	06
	b)		Explain the structure of a C program with an example program.	CO1	-	08
	c)		Write an algorithm and flowchart to find the area of a rectangle.	CO1	-	06
			OR			
2	a)		Define network topology. Explain its types with a neat diagram.	CO1	-	07
	b)		Evaluate the following expressions: a) 6 * 2 / (2 + 1 * 2 / 3 + 6) + 8 * (8 / 4) b) a + 2 > b && !c || a != d && a – 2 <= e where a=11, b=6, c=0, d=7, e=5 c) 2 * ((a%5) * (4+(b-3) / (c+2))) where a=8, b=15, c=4	CO1	-	09
	c)		What are identifiers? List out rules to write identifiers.	CO1	-	04
			UNIT - II			
3	a)		Write a program to calculate all possible roots of quadratic equations.	CO2	PO1	08
	b)		Develop a C program to reverse an integer number “NUM” and check whether it is a palindrome or not.	CO2	PO1	06
	c)		Illustrate the difference between a while loop and a do while loop with an example.	CO1	-	06
			OR			

4	a)		Predict the output of the following codes:
			i.)
			#include<stdio.h>
			int main( )
			{
			int i;
			for(i=1; i<=10; i++)
			{
				CO3	PO2	06

```
            if( i % 4 == 0)
                break;
            printf("%d\n",(i%4));
        }
    printf("%d",i);
    return 0;
    }
```

ii.)

```
#include<stdio.h>
int main( )
{
    int a=1;
    for(; a<10;)
    {
        printf("%d ", a++);
        if(a==4)
            continue;
        a++;
    }
    printf("%d ",a);
    return 0;
}
```

		b)	Write a program in C to plot Pascal Triangle.	*CO2*	*PO1*	**08**
		c)	Discuss the formatted input and formatted output.	*CO1*	-	**06**
			UNIT - III			
	5	a)	Explain the declaration and initialization of one-dimensional array with an example.	*CO1*	-	**06**
		b)	Write a 'C' program to sort the elements of given array using selection sort.	*CO2*	*PO1*	**08**
		c)	Write a program in C to print the string in reverse order.	*CO2*	*PO1*	**06**
			OR			
	6	a)	Explain the following string handling functions with an example for each i. strcat() ii. strcmp() iii. strcpy()	*CO1*	-	**06**
		b)	Given an array of size n=10 with the array elements as below 2, 5, 8, 12, 16, 23, 38, 56, 72, 91 Write a 'C' program to search the element 23 in the given array by using suitable search technique.	*CO2*	*PO1*	**08**
		c)	Write a program in C to read a 3 X 3 matrix and print the difference of two matrices.	*CO2*	*PO1*	**06**
			UNIT - IV			
	7	a)	List & explain the categories of user-defined functions based on arguments and return values.	*CO1*	-	**08**
		b)	Write a C program to compute Fibonacci series using recursive functions.	*CO2*	*PO1*	**06**
		c)	Write a C program to add two integer numbers using user defined function.	*CO2*	*PO1*	**06**
			OR			

	8	a)	Define the term recursion & write a recursive call tree for finding factorial of a positive integer.	*CO2*	*PO1*	**06**
		b)	Explain function definition, function call and function declaration with an example.	*CO1*	-	**06**
		c)	Write a C program to find the GCD of two numbers.	*CO2*	*PO1*	**08**
			UNIT - V			
	9	a)	Write a program to add two complex numbers using structures. Use a function to return the sum of two complex numbers.	*CO2*	*PO1*	**08**
		b)	Write a 'C' program to swap two numbers to illustrate a call by reference.	*CO2*	*PO1*	**06**
		c)	Compare and contrast between Structures & Unions.	*CO1*	-	**06**
			OR			
	10	a)	Create a structure called STUDENT that contains student name, age and percentage using this structure write a program to read the information for one student from the keyboard and print the same on the screen.	*CO2*	*PO1*	**06**
		b)	Write a C program to compute the sum, mean & standard deviation of all elements stored in an array of N real numbers using pointers.	*CO2*	*PO1*	**08**
		c)	Explain preprocessor directives with examples.	*CO1*	-	**06**

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