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: 22CS1ESICP / 22CS2ESICP **Max Marks: 100**

Course: Introduction to C 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)		Write an algorithm and flowchart to find whether a number is positive, negative or zero.	**1**	**-**	**06**
	b)		Check whether below identifier names are valid or not. Justify your answers. i. String1 ii. struct iii. integer@1 iv. +sum v. _name_stud vi. 1var	**2**	**1**	**06**
	c)		Write a program to read principal_amount, Time, Rate of interest and find the Simple interest.	**2**	**1**	**08**
			OR			
2	a)		Explain printf and scanf functions in C with examples.	**1**	**-**	**06**
	b)		Write valid C expressions for the following arithmetic expressions, also indicate the steps of computation for x=5, y=10. a) $x^3 + 3x^2 + 4y - 10$ b) $x^2y^2 + x^3y + 4xy + 20$	**2**	**1**	**06**
	c)		Write a C program to find area and circumference of a circle by reading the radius value.	**2**	**1**	**08**
			UNIT - II			
3	a)		Explain break, continue statements with examples.	**1**	**-**	**05**
	b)		Write a program to read n as no. of lines and print the pyramid in the below form:	**2**	**1**	**07**

			Eg: if n=5 1 2 3 4 5 1 2 3 4 1 2 3 1 2 1			
		c)	Write a program to perform basic arithmetic operations based on the user choice (using switch statement).	**2**	**1**	**08**
			OR			
	4	a)	Explain different types of if statements in C.	**1**	**-**	**05**

		b)	Evaluate the following segments:
			a) int k=5, j=7, i;
			i = k>j ? k<3 ? 0 : 1 : k>3 ? 2 : 3;
			printf("%d",i);
			
			b) int k=15, j=7, i;
			i = k>j ? k<3 ? 0 : 1 : k>3 ? 3 : 4;
			printf("%d",++i);
				2	**1**	**05**

		c)	Write a C program using to declare the result based on marks as follows: Marks / Result <40 / Fail >=40 and <50 / Pass >=50 and <60 / Second class >=60 and <70 / First class >=70 / FCD	**2**	**1**	**10**
			UNIT - III			
	5	a)	Differentiate 1D and 2D arrays with examples.	**1**	**-**	**05**
		b)	Write a program to read an array of integers in sorted order and perform binary search.	**2**	**1**	**07**
		c)	Write a program to read the order of two matrices and perform matrix addition if they are compatible.	**2**	**1**	**08**
			OR			
	6	a)	Explain how one-dimensional and two dimensional arrays are declared and initialized.	**1**	**-**	**05**
		b)	Write a program to read an array of integers and perform linear search.	**2**	**1**	**07**
		c)	Write a C program to read a matrix A(m x n) and find a) sum of each row b) sum of each column	**2**	**1**	**08**

			UNIT - IV			
	7	a)	Explain function prototype, function definition and function call.	**1**	**-**	**05**
		b)	Write a program to perform factorial of a no. using functions.	**2**	**1**	**07**
		c)	Write a program to check if two strings are equal or not without using string built-in functions.	**2**	**1**	**08**
			OR			
	8	a)	Explain w.r.t. functions: a) Actual and formal arguments b) Global and local variables	**1**	**-**	**05**
		b)	Write a C program to check whether a string is palindrome or not.	**2**	**1**	**07**
		c)	Write a program using function that returns the average of n elements of an array.	**2**	**1**	**08**
			UNIT - V			
	9	a)	Describe structures in C with examples.	**1**	**-**	**05**
		b)	Write a C program to define Employee as a structure with members as name, emp_id, salary. Read and display the the same.	**2**	**1**	**07**
		c)	Illustrate the use of nested structures with examples.	**2**	**1**	**08**
			OR			
	10	a)	Describe pointer variable, reference and dereference operators.	**1**	**-**	**05**
		b)	Write a program to swap the contents of two integer variables using pointers.	**2**	**1**	**07**

		c)	Write the output of the following code
			i.
			#include <stdio.h>
			
			int main()
			{
			int *ptr;
			int x ;
			
			ptr = &x;
			*ptr = 0;
			
			printf(" x = %d", x);
			printf(" *ptr = %d", *ptr);
			
			*ptr += 5;
			printf(" x = %d", x);
			printf(" *ptr = %d", *ptr);
			
			(*ptr)++;
			printf(" x = %d", x);
			printf(" *ptr = %d", *ptr);
				2	**1**	**08**

```
    return 0;
}
```

ii.

```
#include <stdio.h>

int main()
{
    int arri[] = {1, 2 ,3};
    int *ptri = arri;

    char arrc[] = {1, 2 ,3};
    char *ptrc = arrc;

    printf("sizeof arri[] = %d ", sizeof(arri));
    printf("sizeof ptri = %d ", sizeof(ptri));

    printf("sizeof arrc[] = %d ", sizeof(arrc));
    printf("sizeof ptrc = %d ", sizeof(ptrc));

    return 0;
}
```

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