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

Autonomous Institute Affiliated to VTU

February / March 2024 Semester End Main Examinations

Programme: B.E. **Semester: I / II**
Branch: Common to all branches **Duration: 3 hrs.**
Course Code: 22CS1ESPOP / 22CS2ESPOP **Max Marks: 100**
Course: Principles of Programming in C

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 draw a flowchart to calculate the sum of the first 10 natural numbers.	*CO1*	-	**06**
	b)	Differentiate between type conversion and type casting with examples.	*CO2*	*PO1,2*	**06**

	c)	**i) Predict the output for the following code snippets**.
		
		a) #include <stdio.h>
		int main()
		{
		int a=0;
		a=5||2|1;
		printf("%d",a);
		return 0;
		}
		
		b) #include <stdio.h>
		int main()
		{
		int a = 11;
		while (a < 20)
		{
		printf("%d ", a);
		a += 2;
		}
		return 0;
		}
		
		ii) Evaluate the following expressions:
		Assume the values of X=3, Y=5 and Z=7.
		
		a) X + = Y - = Z* = 20
		b) X * 2 + Y / 5 – Z * Y
			CO2	*PO1,2*	**08**

			UNIT - II			
	2	a)	If the height of Boy1, Boy2 and Boy3 are read by the user, write a program to determine the tallest of the three boys.	*CO3*	*PO1,2,3*	**06**
		b)	Develop a program to print the following pattern. 0 12 345 6789	*CO3*	*PO1,2,3*	**06**
		c)	Develop a program to calculate tax, given the following conditions using a switch case: • If income is less than 1,50,000, then no tax. • If taxable income is in the range 1,50,001-3,00,000, then charge 10% tax. • If taxable income is in the range 3,00,001-5,00,000, then charge 20% tax. • If taxable income is above 5,00,001, then charge 30% tax.	*CO3*	*PO1,2,3*	**08**
			OR			

	3	a)	Predict the output for the following C programs. Justify the working of the **while loop** and **do-while** concerning the following programs.
			`#include<stdio.h>`
			`#include<conio.h>`
			`int main()`
			`{`
			`int num=5;`
			`while(num<=4)`
			`{`
			`printf("%d\n",num);`
			`num++;`
			`}`
			`return 0;`
			`}`
			`#include<stdio.h>`
			`#include<conio.h>`
			`int main()`
			`{`
			`int num=4;`
			`do`
			`{`
			`printf("%d\n",2*num);`
			`num++;`
			`} while(num<=4);`
			`return 0;`
			`}`
				CO3	*PO1,2,3*	**07**

		b)	Design a program to determine the sum of the given series $1/1 + 2^2/2 + 3^3/3 + \ldots. + n^n/n$.	*CO3*	*PO1,2,3*	**05**
		c)	Differentiate between break and continue statements with examples.	*CO3*	*PO1,2,3*	**08**
			UNIT - III			
	4	a)	What is the need for Arrays? Write the syntax for the declaration and initialization of a one-dimensional array.	*CO2*	*PO1,2*	**05**
		b)	Develop a program to illustrate the working of insertion and deletion at the specified location of an array.	*CO3*	*PO1,2,3*	**10**
		c)	Design a C Program to find the sum of two matrices.	*CO3*	*PO1,2,3*	**05**
			OR			
	5	a)	Write the definition and syntax for the following function terminologies: Function declaration, Function Definition, and Function Call.	*CO2*	*PO1,2*	**06**

		b)	Differentiate between Call by Value and Call by Reference. Write a C program to find the factorial of a number using Call-by-Value and Call-by-Reference. Outline how both are different.	*CO3*	*PO1,2,3*	**08**
		c)	Design a program to determine the type of a triangle given its sides to a function. The function has to return an integer, based on the return value, the calling function prints the appropriate triangle type.	*CO3*	*PO1,2,3*	**06**
			UNIT - IV			
	6	a)	Elucidate the different ways of i) Reading strings from the user and ii) Displaying strings on the screen.	*CO2*	*PO1,2*	**06**
		b)	Develop a C program to compare two strings. (without using a built-in function)	*CO3*	*PO1,2,3*	**06**
		c)	Design a C program to read and display 10 students' information (Student ID, Name, and Date of birth) using nested structures.	*CO3*	*PO1,2,3*	**08**
			UNIT - V			

	7	a)	Analyze and predict the output of the following code.
			
			#include<stdio.h>
			int main()
			{
			int x[] = { 4, 7, 9, 10, 13};
			int *p;
			p = &x[3];
			printf("p = %d\n", *p);
			printf("(p+1) = %d\n", *(p+1));
			printf("(p-1) = %d\n", *(p-1));
			printf("(*p)++ = %d\n", (*p)++);
			printf("(*p + *(p+1) = %d\n", *p+*(p+1));
			return 0;
			}
				CO3	*PO1,2,3*	**05**

		b)	Illustrate the use of the following file processing functions with an example. i) fgets() ii) fprintf() iii) fopen() iv) fclose()	*CO2*	*PO1,2*	**08**
		c)	Demonstrate how to read data from the user and write it into a file called BMSCE.txt and then read the file contents of the same file and display it on the screen.	*CO3*	*PO1,2,3*	**07**

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