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RV COLLEGE OF ENGINEERING®

(An Autonomous Institution affiliated to VTU)

II Semester B. E. Examinations October-2023

Common to AI / BT / CS / CY / CD / IS

PRINCIPLES OF PROGRAMMING USING C

Time: 03 Hours ***Maximum Marks: 100***

Instructions to candidates:

1. Answer all questions from Part A. Part A questions should be answered in first three pages of the answer book only.
2. Answer FIVE full questions from Part B. In Part B question number 2 and 11 are compulsory. Answer any one full question from 3 and 4, 5 and 6, 7 and 8, 9 and 10.

PART-A

1	1.1	#include<stdio.h> $int\ main()$ { $printf("\%d", printf("\%d", 1234));$ $return\ 0;$ } The output for the following program is _____.	01
	1.2	List any two types of Errors.	01
	1.3	$int\ a = 5, b = 7, c = 12, d = 15, x;$ Evaluate the given expression $X = ++a + ++b + ++c + ++d;$ Print the values of x, a, b, c, d after evaluation.	01
	1.4	When $a = 12345$ and $b = 678$, write the output for the following code: $scanf("\%2d\%5d", \&a, \&b);$ $printf("\n\ a = \%d\ and\ b = \%d", a, b);$	01
	1.5	Mention various built-in functions along with its functionality supported for strings in C.	01

	1.6	Analyze the following C program and write the output.
		$int\ main()$
		{
		$char\ arr[][20] = \{"RVCE", "BMSCE", "MSRIT"\};$
		$printf("\%s\n", arr[1]);$
		$printf("\%s\n", arr[0]);$
		$return\ 0;$
		}
			01

	1.7	What is the output of the following code?
		$\#include < stdio.h >$
		$struct\ student$
		{ };
		$void\ main()$
		{
		$struct\ student\ s[2];$
		$printf("\%d", sizeof(s));$
		}
			01

	1.8	What will be the output of the following program?
		$\#include < stdio.h >$
		$int\ main()$
		{
		$char\ str[20]\ =\ "Hello";$
		$char\ *const\ p = str;$
		$*p = 'M';$
		$printf(\%s\backslash n", str);$
		$return\ 0;$
		}
			01

	1.9	What is the purpose of $fseek$ function?	01
	1.10	Give two differences between $calloc()$ and $malloc()$ functions.	01

PART-B

2	a	Write an Algorithm and a Flowchart to print the sum of even terms contained within the numbers 0 to 20.	07
	b	Discuss the process of compiling and running a C program with a neat diagram.	07
3	a	Write a C program to perform the following operations on a matrix: i) Read the elements of the matrix ii) Add the diagonal elements of a matrix. iii) Sum of all the elements of a Matrix.	06
	b	What is the difference between break and continue? Write a program to reverse a given integer number using a for loop and without using library functions	08
		OR	
4	a	Write a program to recognize whether the given character is vowel or consonant using switch statement.	07
	b	Write a C program to display the n terms of harmonic series and find their sum. Harmonic series: $1 + 1/2 + 1/3 + 1/4 + 1/5 \ldots . 1/n$ terms	07
5	a	Write a C program to check a string for palindrome using functions to find the length of the string and a function to check the string passed to function for palindrome. (Note Do not use any string handling functions)	10
	b	Describe global variables, local variables and their scope.	04
		OR	
6	a	Write a C program to sort the names by writing a function for sorting the names passed as an argument.	08
	b	Discuss different categories of C functions with proper examples.	06
7	a	Explain the arithmetic operations that can be carried out using a pointer with an example.	06

	b	What is typedef? Write a C program using structures to add two complex numbers. Create a structure $COMPLEX$, and a function AddCompNum() to add two complex numbers.	08
		OR	
8	a	Briefly discuss why we need pointers and its advantages. Write a program in C to find the length of the string Using Pointer.	07
	b	Write a C Program that prints the $X-Y$ coordinate of two ends of a line using structure.	07
9	a	Define dynamic memory allocation. Write a C Program to demonstrate various Dynamic memory allocation and De-allocation functions used in C.	08
	b	Define linked list. Explain different types of linked list with an example.	06
		OR	
10	a	Differentiate between static and dynamic memory allocation using a C program	08
	b	Explain the functions used in file operations with an example.	06
11	a	Develop a C program to compute average marks of 'n' students (Name, Roll_No, Test Marks) and search a particular record based on 'Roll_No'	10
	b	Write a C program to count number of lines, blank lines and comments in a given program using files.	10