VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)
CHENNAI

Reg. Number:	

Continuous Assessment Test (CAT) – I - AUGUST 2024

Programme	:	**B. Tech. (ECE/ECM)**	Semester	:	**FS 2024-25**
Course Code & Course Title	:	**BECE320E Embedded C Programming**	Class Number	:	**CH2024250102674**
Faculty	:	**Prof. Srinivasan R**	Slot	:	**E1**
Duration	:	**90 Minutes**	Max. Marks	:	**50**

General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information.
- Only non-programmable calculator without storage is permitted.

Answer all questions.

Q. No	Sub Sec.	Description	Marks	Blooms Taxonomy Level
1.	(a)	Write appropriate declarations in C and assign the given initial values for each variable or array. (i) Integer variables: u = 421 (octal), y = fa01 (hexadecimal) (ii) One-dimensional character array: message = "We are safe." (iii) Double precision variable: reading1 = 3.56218×10^{-4}	3	L1
	(b)	Evaluate the following expression in C. float value = (i - 3 * j) % (c + 2 * d) / (x - y) if int i=10, j=5; float x = 0.005, y = -0.01; char c = 'c', d = 'd'. ASCII value of 'c' = 99, 'd' = 100	2	L2

2.	(a)	What is the output of the following code?
		#include <stdio.h>
		int main( )
		{
		int k, num = 65 ;
		k = (num > 5 ? (num <= 10 ? 100 : 200) : 500) ;
		printf ("%c %d\n", num, k) ;
		return 0 ;
		}
			2	L1

	(b)	What is the output of the following code?
		#include<stdio.h>
		int main () {
		printf("Hello!\bHow are you?\n");
		printf("I\tam feeling good.\n");
		printf("I am feeling\r good\n");
		printf("\nI am feeling \\\'good\'\n");
		return 0;
		}
			3	L2

3.	(a)	Write a C program to read the age of 100 persons and count the number of persons in the age group 50 to 60. Use for and continue statements.	5	L3

	(b)	Write a C program using do-while loop to ask the user to enter numbers continuously until 0 and print the count of positive and negative numbers at the end of the program.	5	L3

4.		Write a C program to print a diamond pattern of numbers for a given number of rows using appropriate loops.
		e.g. For n=3, the pattern is
		  1
		 123
		12345
		 123
		  1
			10	L3

5.		What is the output of the following code?
		#include <stdio.h>
		void main ()
		{
		int a, b = 0, d=0;
		static int c[10] = {2, 3, 8, 0, 1 , 4, 5, 6 , 9, 7};
		for (a = 0; a < 10; ++a){
		if ((c[a] % 2) == 1) {
		  b += c[a];
		printf("%d, ",c[a]);
		}
		}
		if(a % 2 == 0) d += a;
		printf("\n%d\n", b);
		printf("%d", d);
		}
			5	L4

6.		What is the output of the following code?
		#include <stdio.h>
		#include <string.h>
		char *p = "Hello world";
		int main(void)
		{
		 int t;
		printf("%d\n",*p);
		printf("%c\n",*p+1);
		printf("%c\n",*(p+1));
		for(t=strlen(p)-1; t>1; t--) printf("%c", p[t]);
		return 0;
		}
			5	L2

7.		The Chebyshev polynomials of the first kind can be calculated using the following recurrence relations: $T_0(x) = 1$, $T_1(x) = x$, $T_n(x) = 2xT_{n-1}(x) – T_{n-2}(x)$ for n=2, 3, 4,…and x is any floating point number between -1 and 1. Write a C program to generate the first n Chebyshev polynomials. The values of n and x should be input parameters. The code should check that n is a positive integer and x is between -1 and 1 only.	10	L3
********** All the best **********				