Reg. No.															

Question Paper Code	13309

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

First Semester

Artificial Intelligence and Data Science Engineering

(Common to All Branches)

20ESCS101 - PROBLEM SOLVING AND PROGRAMMING IN C

Regulations - 2020

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (20 × 1 = 20 Marks)

Answer ALL Questions

		Marks	*K – Level*	*CO*
1.	When an algorithm is written in the form of a programming language, it becomes a _____ (a) Flowchart (b) Program (c) Pseudo code (d) Syntax	*1*	*K1*	*CO1*
2.	The statement that tells the computer to get a value from an input device and store it in a memory location. (a) read (b) write (c) READ (d) WRITE	*1*	*K1*	*CO1*
3.	What will be the output of the following pseudocode? Initialize Integer x, y, z Set y = 1, x = 2 z = x ^ y Print z (a) 1 (b) 2 (c) 4 (d) 3	*1*	*K2*	*CO1*
4.	Who is the father of C language? (a) Steve Jobs (b) James Gosling (c) Dennis Ritchie (d) Rasmus Lerdorf	*1*	*K1*	*CO2*

5.	What will be the output of the following C code
	#include <stdio.h>
	int main()
	{
	int y = 10000;
	int y = 34;
	printf("Hello World! %d\n", y);
	return 0;
	}
	(a) Compile time error (b) Hello World! 34
	(c) Hello World! 1000 (d) Hello World! followed by a junk value
		1	*K1*	*CO2*

6.	#include <stdio.h> is a (a) Preprocessor directive (b) Inclusion directive (c) File inclusion directive (d) None of the mentioned	*1*	*K1*	*CO2*
7.	Array index start at (a) 1 (b) User Defined (c) 0 (d) None of above	*1*	*K1*	*CO3*
8.	Initialize an array in C (a) int arr[3] = (1,2,3); (b) int arr(3) = {1,2,3}; (c) int arr[3] = {1,2,3}; (d) int arr(3) = (1,2,3);	*1*	*K2*	*CO3*
9.	strcmp() function _____ (a) compares the first n characters of the object (b) undefined function (c) copies the string (d) compares the string	*1*	*K1*	*CO3*
10.	Function have_____ scope. (a) Local (b) Block (c) File (d) No	*1*	*K1*	*CO4*

11. In C a pointer variable to an integer can be created by the decalaration *1 K1 CO4*
    (a) int p*; (b) int *p; (c) int +p; (d) int $p;
12. Choose correct statement about Functions in C Language. *1 K1 CO4*
    (a) A Function is a group of c statements which can be reused any number of times
    (b) Every Function has a return type
    (c) Every Function may or may not return a value
    (d) All the above
13. The size of a C structure is *1 K1 CO5*
    (a) C structure is always 128 bytes
    (b) Size of C structure is the total bytes of all elements of structure
    (c) Size of C structure is the size of largest elements
    (d) None of the above
14. In order to fetch the address of the variable, the preceding sign before variable name is _____. *1 K1 CO5*
    (a) Percent(%) (b) Comma(,) (c) Ampersand(&) (d) Asterisk(*)
15. The size of the following structure (Consider integer occupies – 4 bytes) is *1 K2 CO5*

```
struct temp
{
    int a[10];
    char p;
};
```

    (a) 5 (b) 11 (c) 41 (d) 44
16. Which of the following operation is illegal in structures? *1 K1 CO5*
    (a) Typecasting of structure
    (b) Pointer to a variable of the same structure
    (c) Dynamic allocation of memory for structure
    (d) All of the mentioned
17. What is the function of the mode 'w+'? *1 K1 CO6*
    (a) create text file for writing, discard previous contents if any
    (b) create text file for update, discard previous contents if any
    (c) create text file for writing, do not discard previous contents if any
    (d) create text file for update, do not discard previous contents if any
18. fputs() function *1 K1 CO6*
    (a) read a line from a file (b) read a character from a file
    (c) write a character to a file (d) write a line to a file
19. Which function will return the current file position for stream? *1 K1 CO6*
    (a) fgetpos() (b) fseek() (c) ftell() (d) fsetpos()
20. If the mode includes b after the initial letter, what does it indicates? *1 K1 CO6*
    (a) text file (b) big text file (c) binary file (d) blueprint text

PART - B (10 × 2 = 20 Marks)

Answer ALL Questions

21. List the different types of programming languages. *2 K1 CO1*
22. Write an algorithm to print numbers from 100 to 0. *2 K2 CO1*
23. Write the syntax for nested if and else-if ladder. *2 K2 CO2*
24. Differentiate break and continue. *2 K2 CO2*
25. Define Strings. *2 K1 CO3*
26. Define a Two-Dimensional array with an example. *2 K1 CO3*
27. What is meant by Recursive function? *2 K1 CO4*
28. What is an array of pointers? *2 K2 CO4*
29. Write about the access of structure members inside the structure. *2 K2 CO5*
30. Distinguish between the functions scanf() and fscanf(). *2 K2 CO6*

PART - C (6 × 10 = 60 Marks)

Answer ALL Questions

31.	a) i)	Explain various phases in the program development life cycle with a neat diagram.	*5*	*K1*	*CO1*
	ii)	Write short notes on types of linking and loading.	*5*	*K1*	*CO1*
		OR			
	b) i)	Draw a flowchart to find the biggest of three numbers.	*5*	*K1*	*CO1*
	ii)	Write a pseudocode for finding a factorial of N number.	*5*	*K1*	*CO1*
32.	a)	Explain in detail about decision making and looping in C with suitable examples for each.	*10*	*K2*	*CO2*
		OR			
	b) i)	Write a C Program for a simple calculator using a switch statement.	*5*	*K3*	*CO1*
	ii)	Write a C program to check whether the given number is an Armstrong number or not.	*5*	*K3*	*CO1*
33.	a)	Define an array. Explain how to declare and initialize a one dimensional and two dimensional arrays with an example program.	*10*	*K2*	*CO3*
		OR			
	b) i)	Write a C program to add two 3X3 matrices.	*5*	*K3*	*CO3*
	ii)	Write a C program for transpose of a matrix.	*5*	*K3*	*CO3*
34.	a)	What is a function? Explain built in functions available in string.h header file with syntax and example.	*10*	*K2*	*CO4*
		OR			
	b)	Explain in detail about Pass by Value and Pass by Reference and write a program to swap two numbers using pass by value and pass by reference.	*10*	*K2*	*CO4*
35.	b)	Explain the following;			
	i)	Array of Structures with suitable example.	*5*	*K2*	*CO5*
	ii)	Nested Structures with example program.	*5*	*K2*	*CO5*
		OR			
	b)	Explain in detail about storage class specifiers with suitable programs for each category.	*10*	*K2*	*CO5*
36.	a)	Discuss in detail about the various operations performed on file using suitable examples.	*10*	*K2*	*CO6*
		OR			
	b)	Explain in detail about sequential and random access file operations with example.	*10*	*K2*	*CO6*