

Code: 23ES1102

I B.Tech - I Semester – Regular Examinations - JANUARY 2024

INTRODUCTION TO PROGRAMMING
(Common for ALL BRANCHES)

Duration: 3 hours

Max. Marks: 70

- Note: 1. This question paper contains two Parts A and B.
 2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
 3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
 4. All parts of Question paper must be answered in one place.

BL – Blooms Level

CO – Course Outcome

PART – A

		BL	CO
1.a)	Differentiate between the top-down and bottom-up problem-solving approaches.	L2	CO1
1.b)	Differentiate between algorithm and flow chart.	L2	CO1
1.c)	Differentiate between a "while" loop and a "do-while" loop, and provide an example of when you would choose one over the other.	L2	CO1
1.d)	Explain the difference between the "if" statement and the "if-else" statement in terms of their execution.	L2	CO1
1.e)	In programming, what is a string, and how is it typically represented in memory?	L1	CO1
1.f)	What is the purpose of declaring the size of an array when you create it in a programming language like C?	L1	CO1
1.g)	Differentiate between a pointer variable and a regular variable in terms of how they store data.	L2	CO1
1.h)	Explain the role of functions like 'malloc()' and 'free()' in dynamic memory allocation in C.	L2	CO1
1.i)	What is a function in programming, and why is it used?	L1	CO1
1.j)	Compare call-by-value with call-by-reference.	L2	CO1

PART – B

			BL	CO	Max. Marks
UNIT-I					
2	a)	Explain various operators in C.	L2	CO1	5 M
	b)	Compare and contrast high-level programming languages and low-level programming languages. Give examples of each and discuss their respective advantages and disadvantages.	L2	CO1	5 M
OR					
3	a)	Discuss the concept of data types and their importance in programming. Provide examples of situations where choosing the right data type is crucial for program efficiency.	L2	CO1	5 M
	b)	Write an algorithm and draw a flow chart to calculate the sum of first 10 natural numbers.	L2	CO1	5 M
UNIT-II					
4	a)	Create a C program that employs a "while" loop to print all even numbers between 1 and 50, but skips any numbers that are divisible by 6 using the "continue" statement. Provide the code and a detailed explanation.	L3	CO2	5 M
	b)	Write a C program that uses a "for" loop to find the first prime number between 100 and 200. Implement the "break" statement to exit the loop once the prime number is found.	L3	CO2	5 M
OR					
5	a)	Discuss the advantages of using a "switch" statement over a series of "if" statements in certain scenarios. Provide an example to illustrate your point.	L2	CO1	5 M
	b)	Create a C program that continuously prompts the user to enter a positive integer until a negative number is entered. Calculate and display the sum of all the positive integers entered by the user. Utilize a "while" loop,	L3	CO2	5 M

		conditional statements, and the "break" statement to terminate the loop when a negative number is provided.			
UNIT-III					
6	a)	Discuss the importance of string manipulation in programming, including tasks like comparison, concatenation, and substring extraction. Provide a code example in C that demonstrates these string operations.	L3	CO3	5 M
	b)	Explain the advantages of using a two-dimensional array over a one-dimensional array when working with tabular data or grids. Provide real-world examples where two-dimensional arrays are useful.	L2	CO2	5 M
OR					
7	a)	Imagine you need to manage a list of customer names in a business application. Discuss the advantages and disadvantages of using an array for this purpose.	L3	CO2	5 M
	b)	You have an array of integers representing the daily temperatures for a week (index0: Sunday, index1: Monday and so on). Write a C program that finds and prints the day with the highest temperature and the temperature itself.	L3	CO3	5 M
UNIT-IV					
8	a)	Design a C program that reverses the elements of an integer array using pointers. Provide the code and a step-by-step explanation of the algorithm.	L3	CO3	5 M
	b)	Explain the concept of pointer arithmetic. Illustrate with an example program.	L3	CO3	5 M
OR					
9	a)	You are developing a program to manage a library's book collection. Design a C program that uses a structure to represent book information, such as title, author, and	L4	CO4	5 M

		publication year. Implement functionalities to add and search for books in the collection. Include the code and explain how structures are used for this purpose.			
	b)	Discuss the significance of null pointers and the potential issues associated with using uninitialized pointers.	L2	CO3	5 M
UNIT-V					
10	a)	Explain the concepts of variable scope and lifetime in a programming language and provide examples of local and global variables in C.	L2	CO3	5 M
	b)	You are designing a program to manage a library's catalog. Create a C program that defines a function to add books to the catalog. The function should take book details as parameters and append to a file.	L4	CO4	5 M
OR					
11	a)	Define recursion. Develop a program to find factorial of a given number using recursion.	L3	CO3	5 M
	b)	Discuss the significance of file modes (e.g., "r," "w," "a") when opening and manipulating files, and provide an example for each mode.	L3	CO3	5 M