Hi-Tech Institute of Engineering and Technology, Ghaziabad

B.Tech (I/II Semester)
Model Question Paper -1
Programming For Problem Solving (BCS 101/201)

Time: 3 HOUR   **Total Marks: 70**

CO 1.	To Develop Simple Algorithms for Arithmetic and Logical Problems
CO 2	To Translate the Algorithms to Programs & Execution (in C Language).
CO 3	To Implement Conditional Branching, Iteration and Recursion.
CO 4	To Decompose a Problem into Functions and Synthesize a Complete Program Using Divide and Conquer Approach.
CO 5	To Use Arrays, Pointers and Structures to Develop Algorithms and Programs.

SECTION-A

Q.1	Attempt all parts	(7×2=14)

a.	Differentiate between while and do-while loop.	CO 3
b.	What is the difference between if else if and switch case default conditional statements.	CO 2
c.	What do you mean by precedence and associativity while solving some arithmetic	CO 2
d.	List some escape sequences characters	CO 2
e.	Differentiate between array and structure.	CO4
f.	List functionalities of an Operating System.	CO 1
g.	Differentiate between scanf and gets function.	CO 3

SECTION-B

Q.2	Attempt any three parts	(3×7=21)

a.	With relevant examples discuss the various operators in 'C' language. When precedence of two operators in an arithmetic expression is same, how associativity helps in identifying which operator will be evaluated first. Illustrate it with the example.	CO 2
b.	Draw block diagram of digital computer and explain its components briefly.	CO 1
c.	What is string? List some predefined string functions. Write a 'C' program to check whether a string is palindrome or not.	CO 3
d.	i. What are the various primary data types available in C language? Also write the size and format specifier of each data type.	CO 2
	ii. What do you mean by algorithm? Differentiate between algorithm and pseudo code. Write an algorithm to find sum and reverse of a given number.	CO 1
e.	What is searching? Explain its types? Write a Program in C to linear search an element in an array of 10 elements.	CO 4

SECTION-C

Q.3	Attempt any one part	(1×7=7)

a.	Write a program to calculate income tax of an employee according to its annual income: Annual income <=500,000 No tax Annual income >500,000 and annual income <=10,00,000 tax=10% Annual income >10,00,000 and annual income <20,00,000 tax =15% Annual income above 20,00,000 tax =30%	CO 2
b.	Write a program in C to print all armstrong numbers from 1 to 1000.	CO 3

Q.4	Attempt any one part	(1×7=7)

a.	What is sorting? Write a program for Bubble Sort. Also sort the following numbers using Selection sort technique: 60,30,10,50,20,40,70	CO 4
b.	Write a C program to find the multiplication of two 4x4 matrix.	CO 3

Q.5	Attempt any one part	(1×7=7)

a.	i. Write short note on pre processor directive and its types with examples.
	
	ii. Write a C program to print the following :
	   1 2 3 4 5
	   1 2 3 4
	   1 2 3
	   1 2
	   1
		CO 4
		
		CO 3

b.	Explain the different types of parameter passing techniques available in 'C' language.	CO 5

Q.6	Attempt any one part	(1×7=7)

a.	What is switch case default statement in C? Give its syntax. Write a program to demonstrate switch statement.	CO 2
b.	Define structure? Write a program to define a database of fifty students to store their personal details such as roll no, name and marks. Print all the details of the student who have scored marks greater than 75.	CO 5

Q.7	Attempt any one part	(1×7=7)

a.	i. Explain high level I/O functions for file management in C with their syntax and use. ii. What is Pointer? How it declared and initialized give example.	CO5
b.	Write a program in C to check whether a number is prime number or not.	CO3