Program: B. Tech, Course: Computer Science and Engineering
(Artificial Intelligence & Machine Learning)
Subject: Programming with C, Code: ETCS 103
Semester: I

Time: 03 Hours **Max Marks: 70**

Instructions to the Students:

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of short answer type. All questions are compulsory. Each question carries 02 marks.
3. Section B comprises 8 long answer type questions out of which students must attempt any 5. Each question carries 10 marks.
4. Do not write anything on the question paper.

Q. No.	SECTION –A (SHORT ANSWER TYPE QUESTIONS)	Marks
1. a.	Write a statement to print the following line. Assume the total value contained in a variable named *cost*. The sales total is: $ 172.53	(2)
b.	Differentiate between identifiers and variables.	(2)
c.	Convert the following Decimal Numbers into: i) $(164)_{10}$ into $(\ldots\ldots)_2$ ii) $(256)_{10}$ into $(\ldots\ldots)_{16}$	(2)
d.	Differentiate between while and do-while loop.	(2)
e.	Write the program to determine whether a given number is 'odd' or 'even' and print the message NUMBER IS EVEN or NUMBER IS ODD	(2)
f.	Discuss the various storage class specifiers in C.	(2)
g.	Explain different categories of pre-processor directives used in C.	(2)
h.	Explain structure within a structure with an example.	(2)
i.	What is a pointer? Explain how the pointer variable declared and initialized.	(2)
j.	Differentiate between structure and union.	(2)

SECTION –B (LONG ANSWER TYPE QUESTIONS)

2. Write a program that reads two integers from the keyboard, multiplies them, and then prints the two numbers and their product. (10)

3. Differentiate between Call by value and call by reference using suitable examples. (10)

4. What is an array? How a single dimension and two dimension arrays are declared and initialized? (10)

5. An array contains the elements shown below. Using the binary search algorithm. Trace the steps followed to find 88. At each loop iteration, including the last, show the contents of first last and mid. (10)

8 13 17 26 44 56 88 97

6. Write a function that returns the number of times the character is found in a string. The function has two parameters. The first parameter is a pointer to a string. The second parameter is the character to be counted. (10)

7. Create a structure to specify data on students given below: Roll number, Name, Department, Course, and Year of joining. Assume that there are not more than 450 students in the college. Write a function to print names of all students who joined in a particular year. (10)

8. Write a program to perform the following operations on 3 × 3 Matrices A and B: (10)
   a) Addition
   b) Subtraction

9. Explain various string manipulation library functions with their syntaxes. (10)

===END OF PAPER===