BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

SEMESTER: First
SESSION: MO/2023

CLASS: BTECH/IMSC
BRANCH: BT/CIVIL/CHEMICAL/MECH/PIE/FT/PHYSICS

SUBJECT: CS101 PROGRAMMING FOR PROBLEM SOLVING

FULL MARKS: 50

TIME: 3 Hours

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Solve the following equation using a flowchart and algorithm $AX^2 + BX + C = 0$	[5]	CO1	3,4
Q.1(b)	What do you by algorithm? Explain briefly about properties of the algorithm	[5]	CO1	2
Q.2(a)	Find the output of the following fragment of code given in C language	[1X5]	CO2	4

a)
```
for ( int x = 2 ; x <= 6  ; x++  )
{
        if ( x > 4  )
            break ;
        printf( "%d" , x ) ;
        }
}
```

b)
```
int num =10;
 int a;
  a=num++;
 printf("num is %d, a is %d",num,a);
```

c)
```
 int num =10;
while (num++<=15)
{
    if (num ==14)
      continue;
  printf("%d",num);
}
```

d)
```
int a= 2*((8%5)*(4+(15-3)/(4+2)));
printf("%d",a);
```

e)
```
int num =10;
int a=6;
a=num--*6;
printf("num is %d, a is %d",num,a);
```

Q.2(b)	Explain the following with the help of an example a) Implicit and explicit type conversion b) Comparison between while and do while loop	[5]	CO2	2,3
Q.3(a)	Explain the following with the help of an example 1) Array (Single and Multiple Dimension) 2) strings related built-in functions (any two)	[5]	CO3	2,3

PTO

Q.3(b) a) Store and display the following numbers in a matrix of order 3 X4 using a 2D array. [5] CO3 3

10	20	30	40
15	25	35	45
5	15	25	35

b) Find the row sum and column sum of the matrix

Q.4(a) Explain briefly about the bubble sort algorithm or program. [5] CO5 3,4
Sort the following numbers using the bubble sort algorithm
15, 10, 5, 3, 20, 16, 12, 9

Q.4(b) Write a program in C language to solve the factorial of a number using recursive and non-recursive functions. [5] CO5 3,4

Q.5(a) What do you mean by structure? How do you access structure members? Create the following using the structure. [5] CO4 3

Emp_Name	EMP_ID	Department	Salary
Ramesh	1	Computer Science	100000
Adil	2	Electronics	100000

Q.5(b) What do you mean by a pointer? How do you declare a pointer and assign an address to a pointer? Explain briefly about the relation between array and pointer with the help of an example. [5] CO4 3

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