EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Mid Term I Examination, Fall 2022 Semester

Course:	**CSE 103 Structured Programming, Section-7**
Instructor:	**Maheen Islam, PhD, Associate Professor, CSE Department**
Full Marks:	**30 (20 will be counted for final grading)**
Time:	**1 Hour and 10 Minutes**

Note: There are SIX questions, answer ALL of them. Course Outcome (CO), Cognitive Level and Mark of each question are mentioned at the right margin.

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1. **Write** the output of the following C program when the value of n is 10. Describe step-by-step, how you got the output (analyze with justification). [CO1,C2, Mark: 6]

```c
#include<stdio.h>
int main()
{
        int i, x=0,n,a;
        printf("Input value of n:");
        scanf("%d",&n);
        for(i=1;i<=n;i++)
        {
          if(i%2>0)
                a=x++;
              else
                a=--x;
              printf("%d %d",a,x);
        }
        for(j=i-1;j>=1;j--)
                printf("\n%d ",j);
}
```

2. **Write** a C program to calculate the value of π from the following series: [CO1,C2, Mark: 6]

$$\pi = 4 - \frac{4}{3} + \frac{4}{5} - \frac{4}{7} + \frac{4}{9} - \frac{4}{11} + ...$$

Input the number of terms up to which you want to add the terms.

Sample Input/output dialog:
Enter the number of terms:7
pi = 3.283738

Enter the number of terms:9
pi = 3.252365

3. **Write** a C program to input basic salary of an employee and calculate gross salary according to given conditions. [CO1,C3, Mark: 6]
Basic Salary <= 10000 : HRA = 80%, TA = 20%
Basic Salary is between 10001 to 20000 : HRA = 90%, TA = 25%
Basic Salary >= 20001 : HRA = 95%, DA = 30%

4. **Write** a C program to count the odd numbers from a given pair of numbers. Also, find the sum of these numbers. [CO1,C3, Mark: 6]

Sample output :
Input a pair of numbers:
Input first number of the pair: 3
Input second number of the pair: 10
List of odd numbers: 4
3
5
7
9
Sum=24

5. **Write** a C programming to calculate and prints the squares and cubes of the numbers from 0 to n and uses tabs to display them in a table of values. [CO1,C3, Mark: 6]

Sample Output:
Input the value of n: 20
Number Square Cube
=========================
0   0   0
1   1   1
2   4   8
3   9   27
.....
18   324   5832
19   361   6859
20   400   8000