Course No.:	CSC101	Year:	2019
Section No.:	All	Semester:	Summer
Course Title:	Introduction to Computer Programming	Exam:	**Midterm–Set 01**
Coordinator:		Total Marks:	100
School:	SECS	Time & Duration:	10:40 (90 Minute)
Department:	CSE	Date & Location:	22-June-2019
Name:		**ID:**	

Note:
 ➢ It is a semi-open Book Exam. One **A4 size printed material** is **allowed** during this exam. This to help students not to west time memorizing syntax of C++. You must have you name and ID written on this document.
 ➢ **Collaboration** during the Examination is **not allowed**, if found collaboration deranging the exam through verbal or online communication you will be **expelled from the exam immediately**.

Q1. Execute the code as a compiler would and write the printouts on the output column. **40 points** [You will be assessed based on your ability to understand codes for reusability for software engineering purposes.]

C++ Code	Output

``cpp
int x,y,z;
 	
x = -21;
y = 12;
x = 11;
 	
 if(x>y){
     if(x>z){
         if(y>z){
             cout << " Hello world";
         }
         else{
             cout << "You know what";
         }
     }
     else{
         cout <<"it is funny";
     }
 }
 else{
     if(y>z){
         if(x>z){
             cout <<"the other side";
         }
         else{
             cout <<"it changes all";
         }
     }
     else{
         cout<<"life is hard";
     }
 }
``
	life is hard

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C++ Code	Output
| ```cpp
int x, i, sum;
x = 20;
sum = 0;
for(i = 1; i < x; i = i +1){
    if(x%i!=0){
        sum = sum + i;
        cout << i;
    }
}
``` | 36789111213141516171819 |
| ```cpp
int i, print;
int x = 20;
for(i = 1; i <x; i =i+1){
        print = i % 4;
        cout << print << ",";
}
print = i % 4;
cout << print;
``` | 1,2,3,0,1,2,3,0,1,2,3,0,1,2,3,0,1,2,3,0 |
| ```cpp
int x;
x = 10;
while (x % 2 == 0){
    if (x >= 0){
        x = x + 1;
    }
    else{
        cout << x << ",";
    }
x = x - 2;
}
``` | nothing will print, first time x%2 == 0 so programme will not entered into the loop. |

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C++ Code	Output
```cpp int i,j; for(i= 0; i <= 5; i = i +1){ for (j = i ; j >= 0; j = j -1){ if (i == j){ cout << i; } else{ cout << j; } } cout <<endl; } ```	0 10 210 3210 43210 543210
```cpp int i,j; for(i= 0; i <= 3; i = i +1){ for (j = 3-i ; j >= 0; j = j -1){ cout << " "; } for (j = 0 ; j <= i; j = j +1){ cout << j; } for (j = i ; j >= 0; j = j -1){ cout << j; } cout <<endl; } ```	00 0110 012210 01233210

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Q.02: Correct the code. If the line of code is correct then tick (√) on correct code column, if wrong write the correct code. **10 points** [You will be assessed based on your ability to debug C++ syntactic errors.]

Line	C++ code	Correct Code
1	#include <iostream>;	#include <iostream>
2		
3	using namespace std;	
4		
5	int main	int main()
6	{	
7	int x; i; fac; sum;	int x, i, fac, sum;
8		
9	cout << "Enter an integer: ";	
10	cin << x;	cin >> x;
11		
12	fac == 1;	fac = 1;
13	sum == 0;	sum = 0;
14	for (i == 1; i <=x; i = i +1;)	for (i =1; i <=x; i = i +1;)
15	{	
16	if(x%i = 0)	if(x%i == 0)
17	{	
18	fac = fac * i;	
19	}	
20	else (x%i = 1){	else if(x%i == 1){
21	sum = sum + i;	
22	}	
23	}	
24		
25	cout << "Factorial is "<<fac<<endl;	cout << "Factorial is "<<fac<<endl;
26	cout << "Summaiton is "<<sum;	cout << "Summaiton is "<<sum;
27		
28	return 0	return 0;
29	}	

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Q3: Write a C++ code that will take three integer numbers from the user and print the average of those numbers.
10 points [You will be assessed for your ability to use variables, arithmetic operators and produce accurate output]

Example 01:	
Input: Enter the first integer x: 15 Enter the second integer y: 35 Enter the third integer z: 9	**Output:** Average of 15, 35 and 9 is 19.66666
Example 02:	
Input: Enter the first integer x: 10 Enter the second integer y: 12 Enter the third integer z: -9	**Output:** Average of 10, 12 and -9 is 4.33333

Q4: A piecewise function is a compound function that has different values for dependent variables for inputs for independent variable from different range. Write a code in C++ for the following pricewise function.   **20 points**

$$y = \begin{cases} 2 - x & for\ x < 0 \\ x^2 - 10 & for\ 0 \le x < 20 \\ \frac{1}{x} + 5 & for\ 20 \le x \end{cases}$$ [You will be assessed for our ability to use conditions]

Example 01:	
Input: Enter the value of independent variable x: 40	**Output:** Y = 5.025
Example 02:	
Input: Enter the value of independent variable x: 0	**Output:** Y = -10
Example 03:	
Input: Enter the value of independent variable x: 10	**Output:** Y = 90
Example 04:	
Input: Enter the value of independent variable x: -10	**Output:** Y = 12

Q5: Write a C++ code that will print the sequence and sum of all prime numbers within a given positive sequence.
20 points [you will be assessed for your overall ability to use iterations, conditions and input, output abilities]

Example 01:	
Input: Enter the left range x: 15 Enter the right range y: 35	**Output:** 17 + 19 + 23 + 29 + 31 = 119
Example 02:	
Input: Enter the left range x: 5 Enter the right range y: 25	**Output:** 5 + 7 + 11 + 13 + 17 + 19 +23 = 95

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