CS11001: Programming and Data Structures

Class Test I

Total Marks (10 x 2):

Answer All Questions. Write your answers in the boxes provided.

Section:	Roll:	Name:

1(i). State which of the following (A, B, C, D) are valid variable names in C.

B

(A) `first&second`   (B) `first_second`   (C) `while`   (D) `1st2nd`

(ii). Write the output of the following code segments

```
int X= 2, Y = 5;
(X > Y) ? printf("%d", Y) : printf("%d", X);
```

2

2. What are the values of the following expressions?

Expression	Value
`3.0/6 + 18/(15%4+2)`	**3.5**
`24/(1 + 2%3 + 4/5 + 6 + 31%8)`	**1**

3. The correct statement which assign the decimal result of dividing the integer variable `sum` by 3 into the float variable `costing`, is? (Use type casting to ensure that floating point division is performed.)

```
Given: int sum = 7; float costing;
```

C

```
(A) (float) costing = sum / 3;        (B) costing = (float) (sum / 3);

(C) costing = (float) sum / 3;        (D) costing = float ( sum / 3 );
```

4. What is the output of the program segment:

```
int i=3;
printf( "%d\n", (--i + 3) );
printf( "%d\n", (i++ + 10) );
printf( "%d\n", ++i );
i += i;
printf( "%d\n", i-- );
printf( "%d\n", i );
```

5

12

4

8

7

5. Let (*x1*, *y1*) and (*x2*, *y2*) be the co-ordinates of two given points. Write down a logical expression using the variables *x1, y1, x2, y2*, which is TRUE when *both the points lie in the same quadrant* of the co-ordinate system. Assume that none of the points lie on the co-ordinate axes. A short expression is preferred.

> **((X1 * X2 > 0) && (Y1 * Y2 > 0)) (alternates are possible)**

6. Given, *a = 20, b = 15, c = 10,* and *x = 1, z = 2*, before the following nested-if statement is executed. What are the values of *x* and *z* after the nested-if statement is executed.

```
if (a<b) x=a; else if (b>c) if (c>a) z=a; else z=b; else x=b;
```

> **x = 1**
>
> **z = 15**

7. Consider the program segment:

```
int sum = 0;
int i = 0;
while (i < 5)
{
   sum = sum + i;
   i++;
}
printf("%d\n",sum);
```

Suppose we replace the while loop in the segment above with a for loop. Which of the following for loops will result in the same value of sum printing out?

```
A.    for (int i = 0; i <= 5; i++)
          sum = sum + i;
B.    for (int i = 1; i <= 5; i++)
          sum = sum + i;
C.    for (int i = 1; i < 5; i++)
          sum = sum + i;
D.    for (int i = 2; i < 5; i++)
          sum = sum + i;
E.    for (int i = 1; i < 6; i++)
          sum = sum + i;
```

> **C**

8. What is the output of the program segment:

```
int x=0;
for(int i=0; i<3; i++) {
for( int j=i; j<3; j++) {
x = x + j;
}
}
printf("%d",x);
```

> **8**

9. What is the output of the following program segment:

<div style="border: 1px solid black; padding: 8px; display: inline-block;">**Num = 3, x = 30**</div>

```
int num   = 1, x = 10;
do
   {
     x += 10;
     num ++;
   }
while (num == 2);
printf("Num = %d, x = %d", num, x);
```

10. Rewrite the following statement using a switch statement.

```
if( letter == 'X' )

    sum = 0;

     else if ( letter == 'Z' )
              valid_flag = 1;
          else if( letter == 'A' )
                    sum = 1;
                else
                   printf("Unknown letter -->%c\n", letter );
```

```
char   letter;

switch (letter)

   {

      case 'X' : sum = 0;   break;

      case 'Z' : valid_flag = 1;   break;

      case 'A' : sum = 1;   break;

      default  : printf("Unknown letter → %c \n", letter);

   }
```

Rough Work