ESC101: Fundamentals of Computing | MAJOR QUIZ I | 29/08/2019						
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Instructions:

1. This question paper contains a total of **3** pages (**6** sides of paper). Please verify.
2. Write your name and roll number on every side of every sheet of this booklet
3. Write final answers neatly with a pencil or blue/black pen in the given boxes.
4. The duration of this quiz is 60 minutes.

Q. 1: Write **T** or **F** in the box for **True** and **False,** respectively. **(1 x 10 = 10 marks)**

1.	T	The statement **printf("%d, 9);** will not compile. T
2.	F	**char x = 'z' + 1;** Here, the value of **x** will be **'a'**. F
3.	T	Say the value of **x** is **1**. Then **y = x < 4 ? x : x > 0 ? 4 : 0;** will make the value of **y** to be equal to 4.
4.	T	Say **p** is **1073741824** (which is equal to 2^30). Then, **printf("%ld",2*p*(long)1);** will print a negative number. p= int doubt
5.	F	Say the variable **p** has a negative value. **int a = (!p || !p) == !(p && p);**. The value of **a** is 1.
6.	F	**break** is necessary in a switch block. F
7.	F	Max value of **signed char** data type is 128. F
8.	T	**_int** is a valid variable name. T
9.	T	Say the value of **x** is 9. Then, **y = 4 % 2 + - 12 + 9/2/2 + (x++);** will result in **y** being a negative number. 0 −12 + 2 + 9 T
10.	F	**a = 4, b = 5, c = 6.** Then the values of **a < b < c** and **c > b > a** are the same. 1<C ✓ 1>a ✗

Q. 2.: Multiple choice, SINGLE correct. (Tick the correct option) **(2x4=8 marks)**

2.1 Which of the following cannot be stored in unsigned char datatype?

p&&p=1
!1=0 1==0
0.

✗	a)	'c'
✗	b)	'9'
	c)	90
✓	d)	'90'

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2.2 What will be the output of the program on the right?

a)	18
b)	9 18 ✓
c)	9
d)	None of These

Ans = B

```
#include <stdio.h>
int main() {
      int p = 9;
      if (p > 9);
            printf("%d ", p);
      printf("%d", p*2);
      return 0;
}
```

81/2.0
40 ✗

2.3 **int r = 9; float x = 1.0 + (int)pow((double)r,2.0)/2.0;** The value of x is:

a) 41.5	b) 41.0 ✓	c) 40.5	d) 42.0

2.4 The output of the code shown on the right will be

a)	1
b)	0
c)	-1
d)	12

```
#include <stdio.h>
int main() {
      int x = - 1;
      if (x++) {
            printf("%d\n", x);
      }
      else {
            printf("12\n");
      }
      return 0;
}
```

Q. 3: Multiple choice, MULTIPLE correct. B (Tick all correct options) **(3 x 2 = 6 marks)**

3.1. Look at the code of the right below. We want the output to be **12 13**. Which of the following inputs will work?

a)	12a 13
b)	12a 13
c)	12 a 13
d)	12 13

```
#include <stdio.h>
int main() {
      int p, q;
      scanf("%da %d", &p, &q);
      printf("%d %d", p, q);
      return 0;
}
```

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3.2 Which of the following will print **3**? Value of **a** is **2**, and **b** is another variable of type **int**.

a)	printf("%d", a++);
b)	printf("%d", ++a);
c)	printf("%d", ++a++);
d)	printf("%d", (b =a++));

Q. 4: Correct the program. **(5 x 2 = 10 marks)**

In both of the following questions, find the LOGICAL/COMPILATION errors in the program given below and write the line number as well as the correct version of the line in the table provided. The comments next to each statement convey the intent of the statement. If that statement does not give any COMPILATION error, but the intent does not match what the statement is actually doing, write down the correct version to fix the LOGICAL error.

4.1

```
1    #include<stdio.h>
2    int main(){
3        int a = 2;
4        a = ++(a++);   //increment the value of a by 2
5        long b = a << 31
6        a <<= 3;
7        printf("%d",b)
8        a ^= 2;              // computing square of a
9        printf("%d",&a);     // printing the value of a
10       return 0;
11   }
```

Line Number	Correct Statement
4	a = a+2;
5	long b = a << 31;
8	a = a*a;
7	printf("%d", b);
9	printf("%d", a);

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4.2

```
1    #include<stdio.h>
2    int main(){
3       int a = 2, b = 3; int c;
4       //trying to print 0
5       printf("%d",a/(float)b);
6       scanf("%d",c);  //input given is 0
7       if(c == 0);
8           printf('%d',c++);
9       else
10          printf("%d",--c);
11      c = [c + {5*(3-1)}];
12      printf("%d",c);
13      return 0;
14   }
```

Line Number	Correct Statement
5	printf ("%d", a/b);
6	scanf ("%d", &c);
8	printf ("%d", c++);
~~7~~	~~if(c == 0)~~
11	c = (c + (5*(3-1)));

Q. 5: Write the Output. **(4 x 4 = 16 marks)**

What will be the output of the following programs? Write the outputs according to the given inputs in the space provided below.

5.1

```
#include<stdio.h>
int main(){
    int a,b;
    scanf("%d %d", &a, &b);
    if( a >= 0 && a < 3)
        if(b > 0)
            printf("%d",a);
    else if ( a > 0 || b < 0)
       printf("%d",b);
    else
       printf("%d%d",b,a);
       printf("%d",a<<2);
}
```

INPUT	OUTPUT
0 0	000
1 -1	-14
2 1	28
3 2	12

000

-14

28

12

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5.2

```
#include<stdio.h>
int main(){
    int a,b,c,d;
    a = b = c = d = 5;
    a = a++ + ++a + --a ;
    b = b++ +  --b + ++b;
    c =  c++ + 1;
    d  = d++;
    printf("%d %d %d %d",a, b, c, d);
    return 0;
}
```

OUTPUT:	18 16 6 5

18 16 6 5

5+7+6 5+5+6

5 + 5 + 6

5.3

```
#include<stdio.h>
int main()
{
    char a,b,c;
    scanf("%c%c%c",&a,&b,&c);
    switch (b)
    {
        case 'a':
            printf("%c",a);
            break;
        case 'b':
            printf("%c",b);
        case 'c':
            printf("%c",c);
            break;
        default:
            printf("%d",1);
            break;
    }
    return 0;
}
```

INPUT	OUTPUT	
a b c	bc	bc
cba	ba	ba
ba c	b	b
a cb	1	1

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5.4

```
#include<stdio.h>
int main(){
    int a = 3, b = 5;
    printf("%d %d\n",(a+b)/2,a/2+b/2);
    a = 1, b = 3;
    if ((a!=0) & (b=2)){
        printf("%d %d\n",a,b);
    }
    else
    {
        printf("%d %d\n",b,a);
    }
    return 0;
}
```

OUTPUT:	4 3 1 3

4 3
1 3

SPACE FOR ROUGH WORK

4, 1+2 3 1 & 1 : 1.

1 & 1