Birla Institute of Technology & Science, Pilani
Second Semester 2022-23
CS F111 – Computer Programming
Mid Semester Examination

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03/05/2023 **Max. Marks: 60M** **Duration: 90 mins**

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ID No: **Name:**

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Instructions:

- This is an in-built question paper. Answers must be written in this question paper itself and later submitted. Write the answers only in the boxes/space provided for each question.
- Over-written answers of any kind will not be accepted for rechecks.

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Recheck request (Write question number only)

1. Draw a flowchart that takes 10 numbers as input from user and finds the minimum and second minimum of the numbers entered. **8M**

2. In a shopping store, there is a simple 30% discount for purchasing Rs 5000 and above, while the discount is 20% for purchasing Rs 3000 and above but below Rs 5000, and a flat Rs 300 discount for purchasing Rs 2000 and above but below Rs 3000. But there is no discount for below Rs 2000. The customer needs to pay 15% tax extra, for buying Rs 2000 and above after discount. Complete the code below to compute the **final cost** of buying items considering all of the above cases. **10M**

```
#include <stdio.h>
float discount(float price)
{/*Your code for calculating discount goes below*/









}
int main()
{
   float price, amount;
   printf("Enter the bill price\n");
   scanf("%f", &price);
   amount=discount(price);
   /*Your code for tax calculation goes below*/









   printf("Final payable amount after discount with tax=%f", amount);
   return 0;
}
```

3. Write down the output of the following snippets of code. Assume that the required libraries (e.g., #include<stdio.h>) and the wrapper functions (e.g., main function) are already present. **15M**

4M

```
int i,j,k=0;
for(i=0;i<3;i++)
   for(j=0;j<2;j++)
     k++;
printf("%d",k);
}
```

OUTPUT: _____

4M

```
void fun(int d)
{   int r = 0, i = 1;
    while (d!=0) {
        r += (d%8) * i;
        d /= 8;
        i *= 10;
    }
    printf("%d", r);
}
```

2M

```
int a = 10, b = 5;
if(a && b) printf("Hello");
else printf("Hi");
```

OUTPUT: _____

2M

```
int a = 0;
a = (++a == 1) > 2 ? 4 : 3;
printf("%d",a);
```

OUTPUT: _____

3M

```
int fun(int x,int y){
   x=x*x+y;
   return x;
}
int main(){
   int x=2, y=5;
   x=fun(y,x);
   y=fun(y,x);
   printf("%d \n", y);
   return 0;
}
```

OUTPUT:_____

OUTPUT: _____		

4. Complete the code below to print the following type of pattern for variable number of rows, i.e., your code should work for any number of rows taken as input. The pattern below is for rows=5. **Do not use or declare any extra variables other than those provided in the code below.** **8M**

```
1
2 1
3 2 1
4 3 2 1
5 4 3 2 1
```

```
void main()
{
 int i, j, rows;
 scanf("%d", &rows);
 /*Your code goes below*/
 for(                              )
 {


    for(                              )
    {



    }



 }

}
```

Consider the following program for **Questions 5 to 7**

```
static int x;
int y;
void main() {
   const int val=10;
   static char c; c = 'Z'; c--;
}
```

5. Storage class of variable **y** is_____. It resides in _____ segment of the memory. Its default value is _____. **3M**

6. Storage class of variable **val** is _____. It resides in _____ segment of the memory. **2M**

7. The variable **c** resides in _____ segment of the memory and occupies _____ bytes. **2M**

8. Write a function in C to display all positive integers (starting from 1) such that the sum of the cubes of any three consecutive integers is within the range 1-1000. For every set of three such consecutive integers, you must print those integers along with their sum, e.g., if one set of integers is 2,3,4; and the sum of their cubes is 99, you should print "Sum=99 for consecutive numbers 2,3, and 4". You are not allowed to use **math.h** library. **12M**

```
#include <stdio.h>
int cube(int r)
{/*Your code for cube calculation goes below*/



}
int main()
{
   int i, sum=0; /*Your code for Sum of cubes calculation goes below*/
   for (_____)
   {









   }
   return 0;
}
```

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