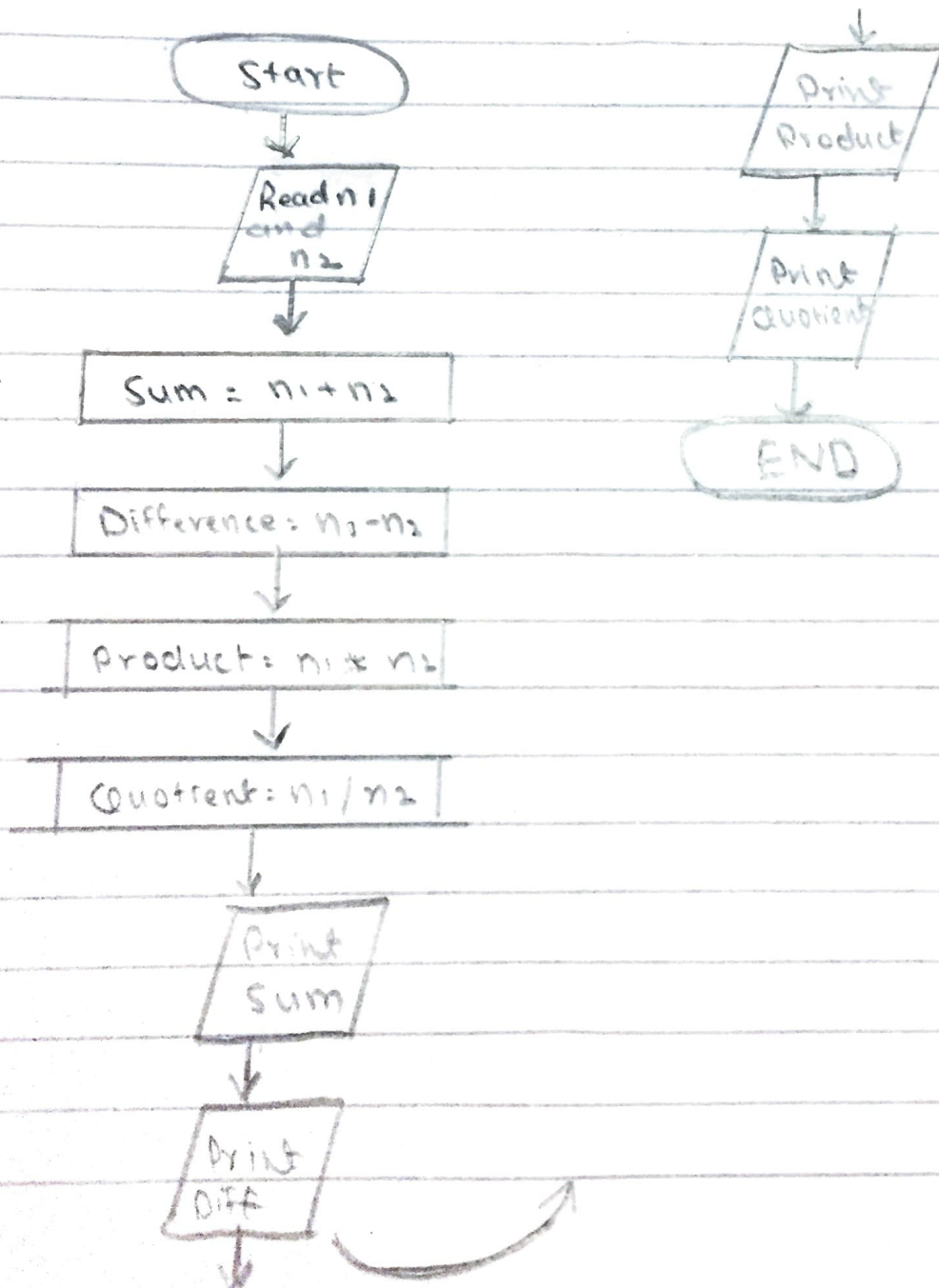


ID 17015  
Bs Cs 3rd semester  
Programming fundamentals  
Mid Term  
Sir Fazal-e-Malik.

Q.1  
(a)

Draw the flow chart . . . . . sum, diff, product and quotient.

Flow chart:



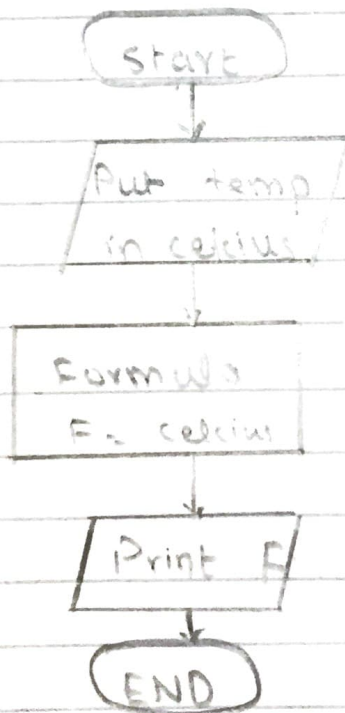
**Program:**

```
#include <iostream>
using namespace std;
int main ( )
{
    int n1, n2, diff, sum, product, quotient;
    cout << "Enter n1 ";
    cin >> n1;
    cout << "Enter n2 ";
    cin >> n2;
    diff = n1 - n2;
    sum = n1 + n2;
    product = n1 * n2;
    quotient = n1 / n2;
    cout << "diff = " << diff << endl;
    cout << "sum = " << sum << endl;
    cout << "product = " << product << endl;
    cout << "quotient = " << quotient << endl;
    return 0;
}
```

- Q. (b) Draw the flow chart and write c++ program to prompt user for temperature in degree celcius (C), then convert the temperature in degrees Farenhit (F) using the following Formula and display temperature in Farenheit (F) on monitor.

$$F = \frac{9}{5} * C + 32$$

Flow chart:



**Program:**

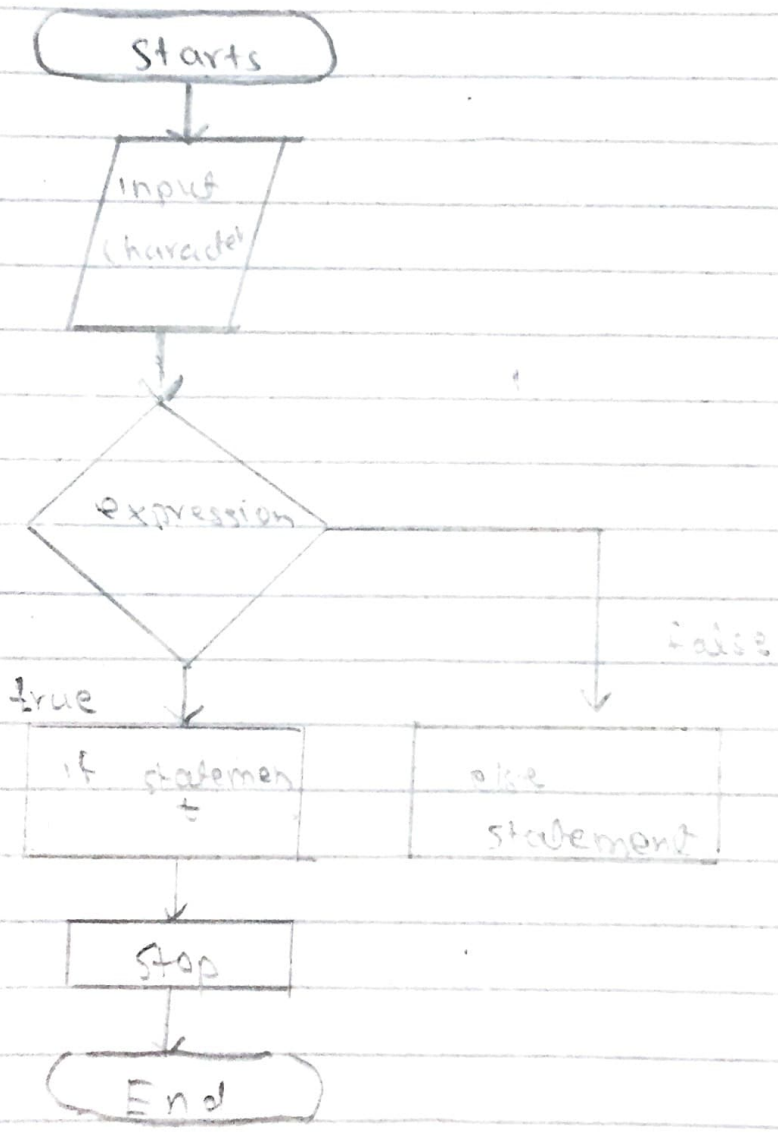
```
#include <iostream>
using namespace std;
int main ( )
{
    int c, f;
    cout << "Enter the temperature in celcius=";
    cin >> c;
    
$$F = C * \frac{9}{5} + 32$$

    cout << " Temperature in Farenheit = " << f;
    return 0;
}
```

Q2  
(9)

Draw the flow chart and write a C++ program that will prompt an operator to input three characters, receive those three characters, and display a welcoming message to the screen such as 'Hello xxx! we hope you have a nice day.'

Flow chart:



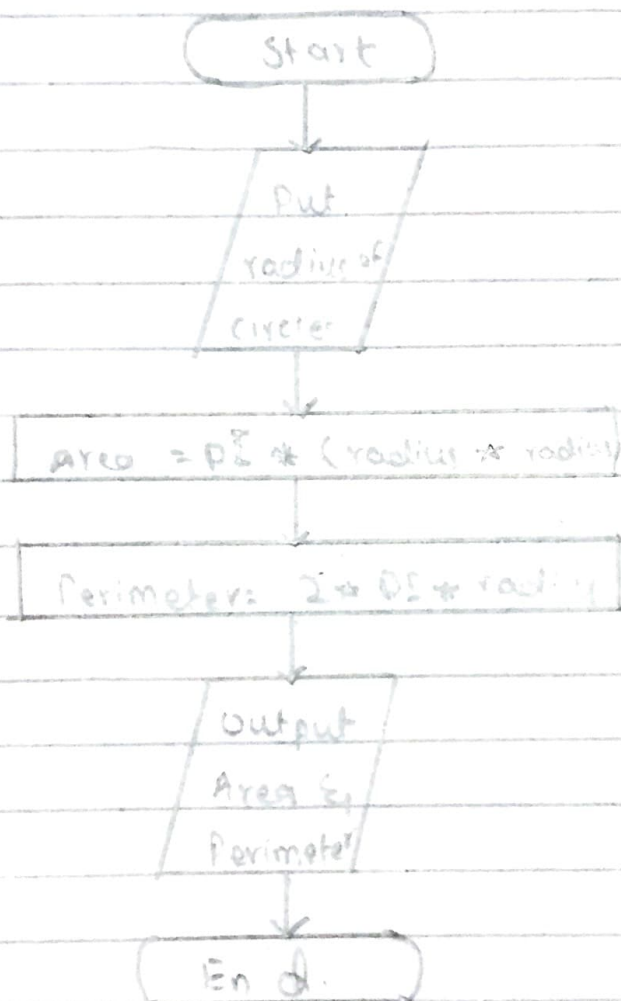
## Program:

```
#include <iostream>
#include <string>
using namespace std;
int main( )
{
    int size = 0;
    char x[3];
    cout << "Enter character:";
    cin >> x
    size = strlen(x);
    if (<size>3) {
        cout << "max 3 characters are allowed" << endl;
    }
    else
    {
        cout << "hellow xxx! we hope you have a
        good day!";
    }
    return 0;
}
```

Q2  
(b)

You were asked by your project leader to write a simple program that obtains the radius of circle. The program calculates the area and perimeter then print radius, the area and the perimeter. Draw the flow chart and write a c++ program.

Flow chart:



**Program:**

```
#include <iostream>
using namespace std;
int main ()
{
    float PI = 3.14159;
    float radius, area, perimeter;
    cout << "input the radius = ";
    cin >> radius;

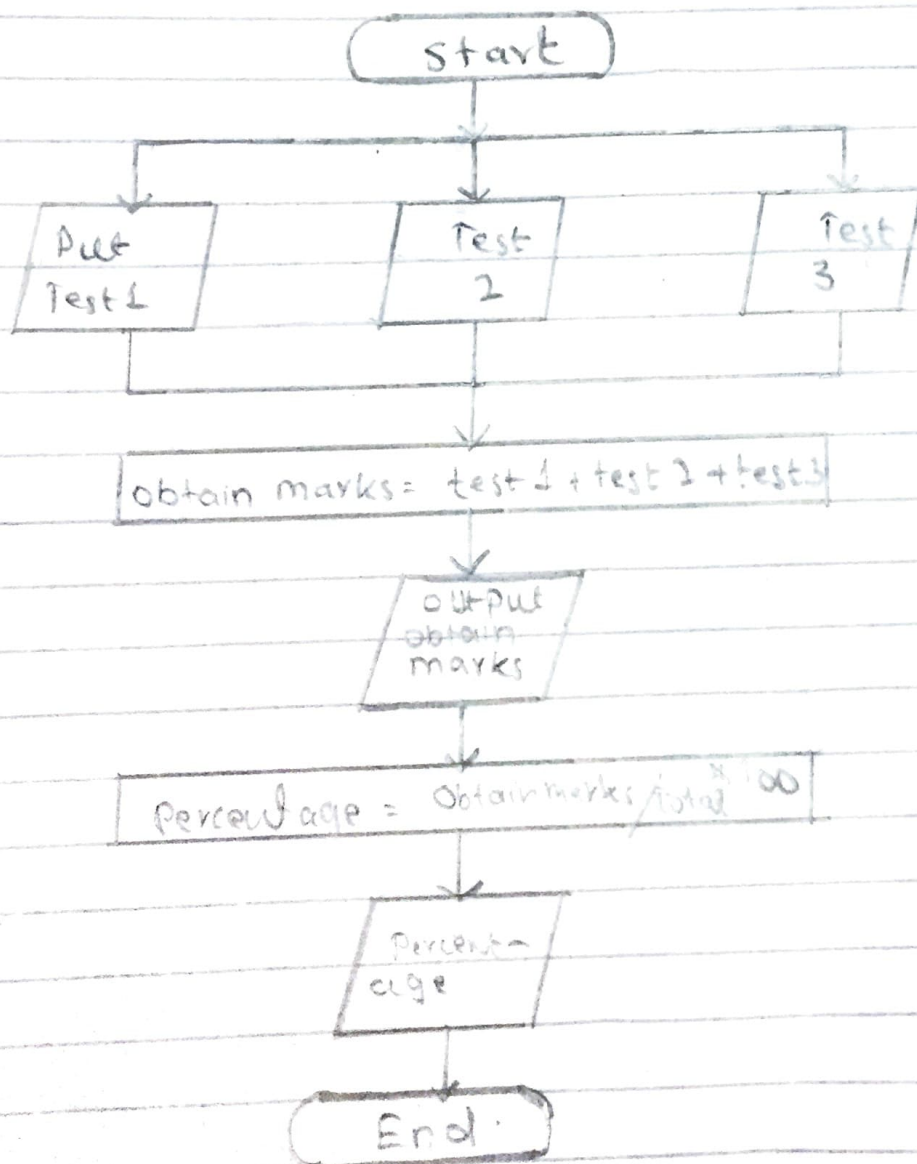
    area = PI * (radius * radius);
    perimeter = 2 * PI * radius;
    cout << "The area of circle is = " << area << endl;
    cout << "The perimeter of circle is = " << perimeter << endl;
    return 0;
}
```



Q3  
(a)

A student has to take three tests per semester. Each test has maximum marks of 50. By using a system, lecturer can enter marks obtained for each test as input. Draw a flow chart and write C++ program to calculate the percentage obtained by the student. Print the result.

**Flow chart:**



**Program:**

```

#include <iostream>
using namespace std;
int main ( )
{
    int total-marks = 150;
    int per_test_maximum_marks = 50;
    int obtain_marks;
    int float percentage;
    int test 1, test 2, test 3;
    cout << "Enter test 1 marks:" ;
    cin >> test 1;
    cout << "Enter test 2 marks:" ;
    cin >> test 2;
    cout << "Enter test 3 marks:" ;
    cin >> test 3;
    obtain_marks = test 1 + test 2 + test 3;

    cout << "obtain marks = " & obtain_marks << endl;

    percentage = obtain_marks / total marks . x 100;

    cout << "Percentage = " << percentage ;
    return 0;
}

```

**Out put:**

P10

Enter test 1 marks: 44

Enter test 2 marks: 25

Enter test 3 marks: 35

Obtain marks = 104

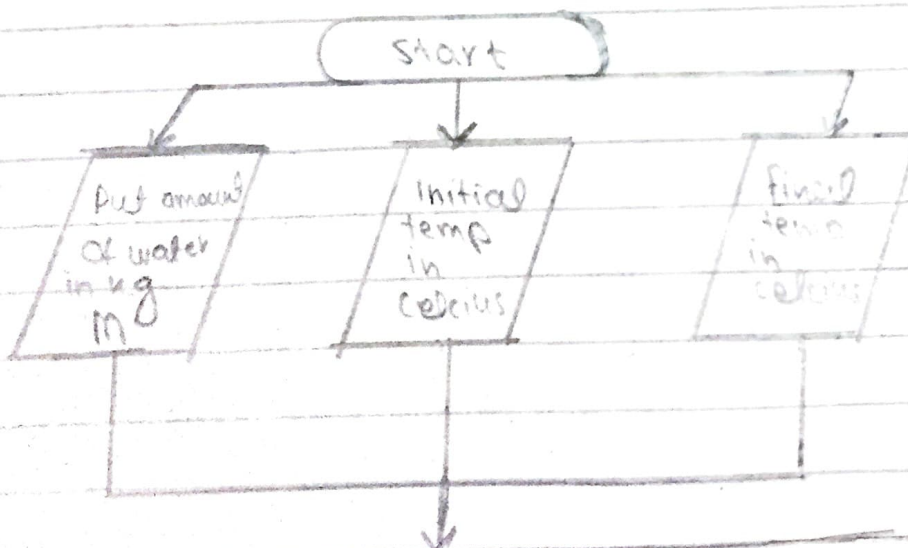
Percentage = 69.3 %

Q<sub>3</sub>  
(b) Draw the flow chart and write C++ program to calculate energy needed to heat water from initial temperature to final temperature. The user will enter the water amount (in kg) and its initial and final temperatures. The formula to compute the energy is

$$Q = M * (\text{Final temperature} - \text{initial temp}) * 4184$$

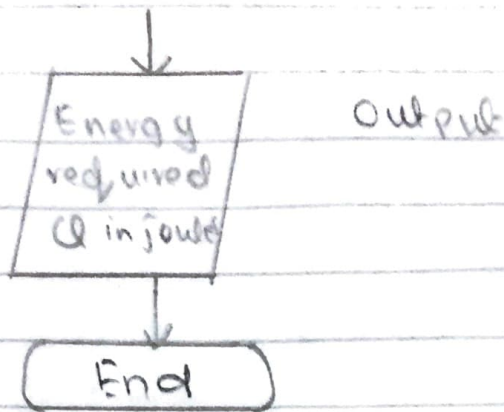
Where M is the weight of the water (in kg) temperatures are in Celsius and energy Q is measured in joules.

**Flow chart:**



$$Q = M * (\text{Final temp} - \text{initial temp}) * 4184$$

PTO



### Program:

```

#include <iostream>
using namespace std;
int main ( )
{
    int initial_temp;
    int final_temp;
    int water_amount;
    int energy;
    int Q, M;
    Q = energy;
    M = water_amount;
    cout << "amount of water in kg=";
    cin >> M;
    cout << " Final temp initial temp=";
    cin >> initial_temp;
    cout << " Final temp = ";
    cin >> final_temp;
    Q = m * ( final_temp - initial_temp ) * 4184;
    cout << " Energy required = " << Q;
    return 0;
}
  
```