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Degree # BSc
Subject # Programming
Fundamental

Mid-Term paper

Q1

a) Draw the flow chart and write a C++ program to get two integer items from keyboard and then display to the screen their sum, difference, product and quotient.

Codes-

```
#include <algorithm>
```

```
using namespace std;
```

```
int main ()
```

```
{
```

```
int a, b;
```


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```
cout << "2 integers: ";
```

```
cin >> a >> b;
```

```
cout << "Addition: " << a+b << endl;
```

```
cout << "Subtraction: " << a-b << endl; //  
the same for average and  
product
```

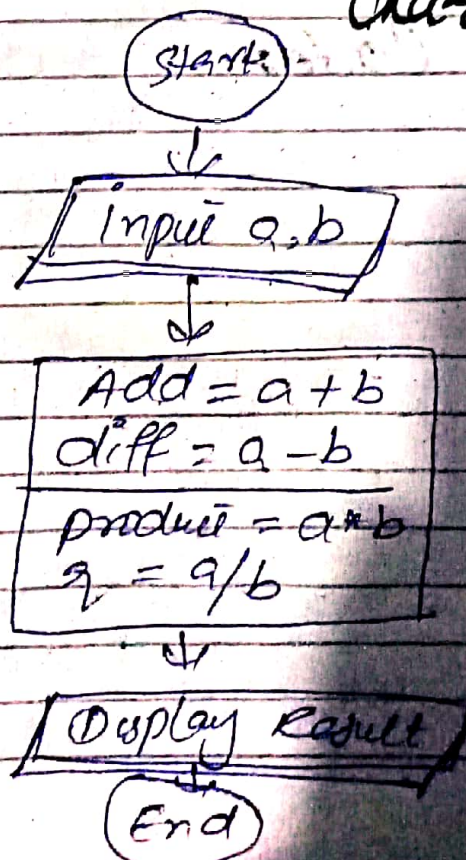
```
cout << "product: " << a*b << endl;
```

```
cout << "Division: " << a/b << endl;
```

```
system ("Pause");
```

```
return 0; }
```

Flow
chart



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b) Draw the flow chart and write a C++ program to prompt the user for the temperature in degrees Celsius (C), then convert the display temperature in degrees Fahrenheit (F) using the following formula and display temperature in Fahrenheit (F) on monitor.

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

```
#include <iostream>
using namespace std;
```

```
int main() {
```

```
    int cel;
```

```
    int farn;
```

```
    cout << "Enter temperature:";
```

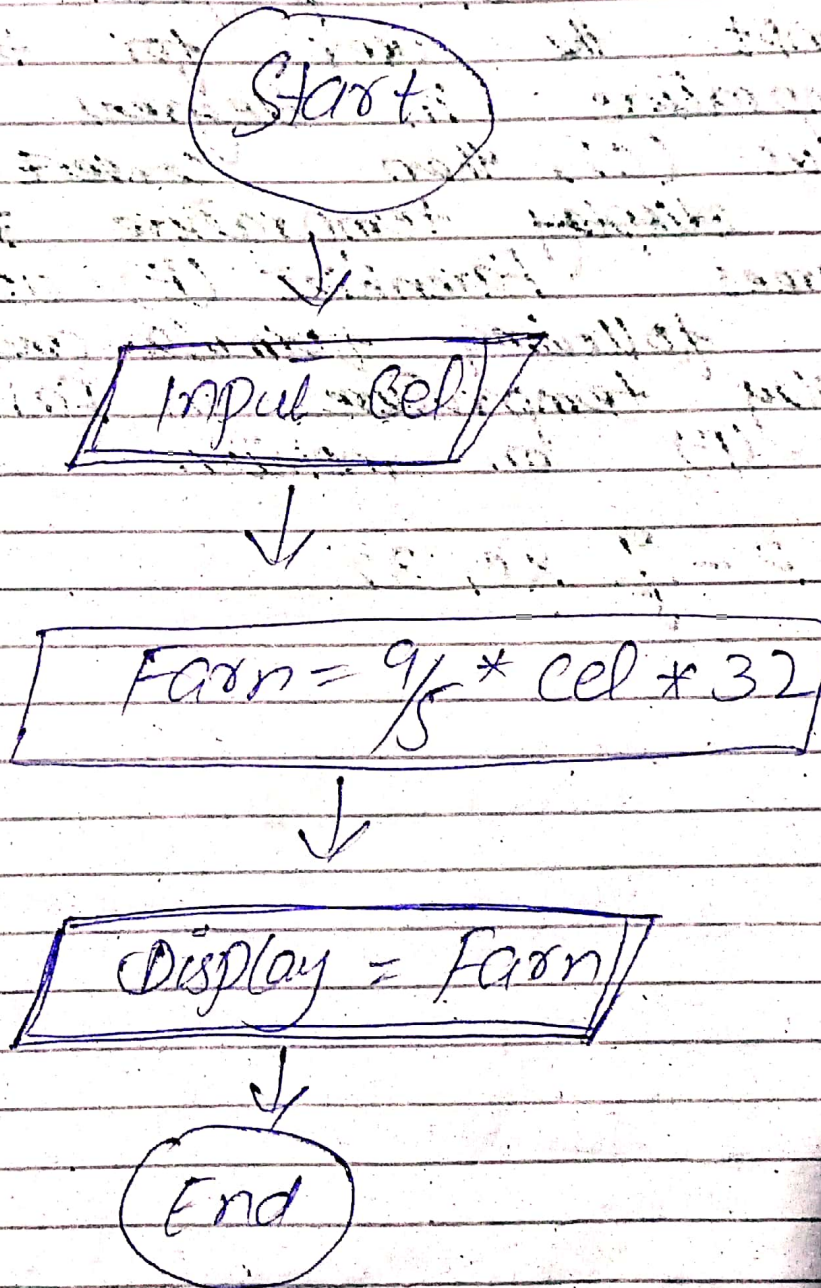
```
    cin >> cel;
```

```
    farn = 9/5 * cel + 32;
```

```
    cout << "Temperature = " << farn; }
```

(4)

Flow chart



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Q2

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

```
#include <iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
    string a;
```

```
    cout << "Enter 3 chars:";
```

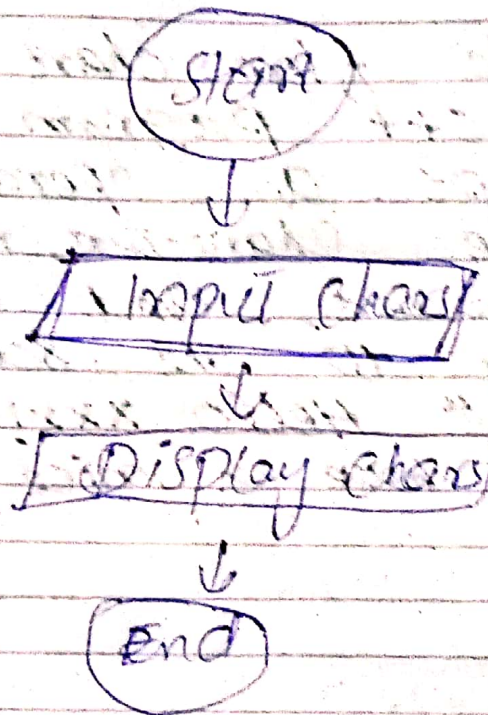
```
    cin >> a;
```

```
    cout << "Hello," << a << " we hope  
you have a nice day";
```

```
}
```


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Flow chart



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

```
#include <iostream>
#define PI 3.14159
using namespace std;
```

```
int main()
```

```
{
```


(7)

float radius, area, circum;

cout << "In\n Find the area and circumference of any circle: \n";

cout << "In\n Find the area and circumference of any circle: \n";

cout << "Input the radius (1/2 of diameter) of a circle:";

cin >> radius;

circum = 2 * PI * radius;

area = PI * (radius * radius);

cout << "The area of the circle is : " << area << endl;

cout << "The circumference of the circle is : " << circum << endl;

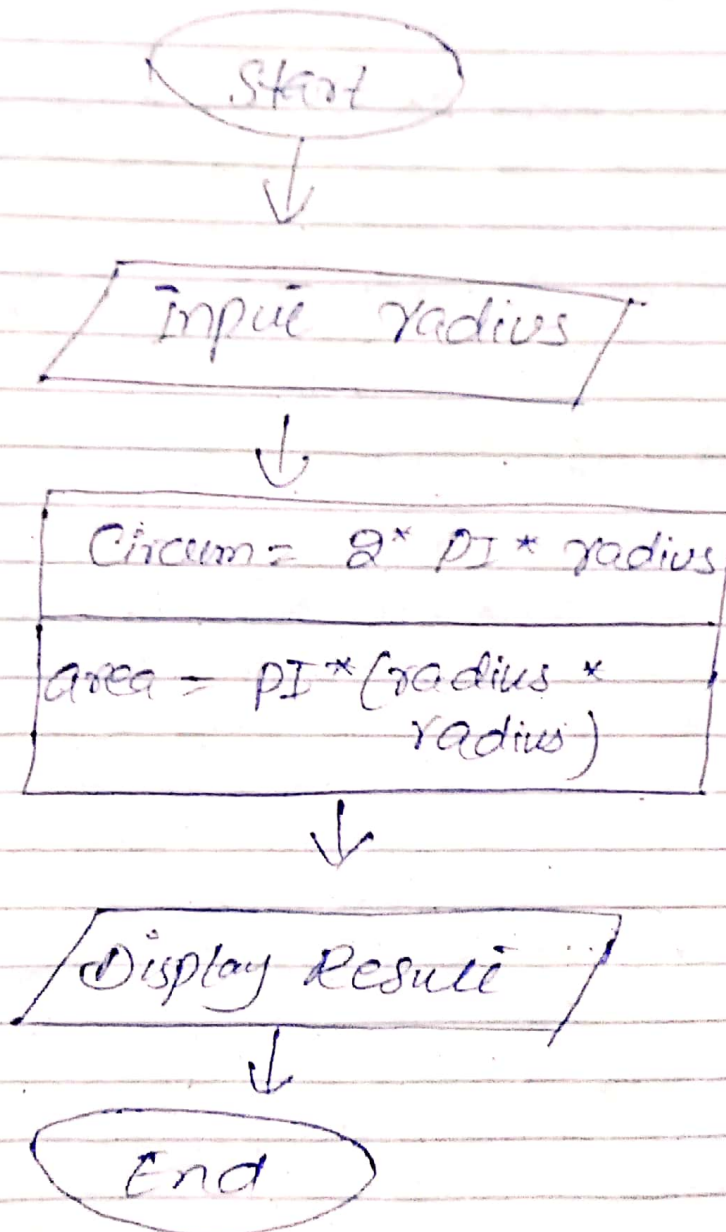
cout << endl;

return 0;

}

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Flow Chart



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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.

```
#include <iostream>
```

```
#include <string>
```

```
using namespace std;
```

```
int main () {
```

```
int a, b, c, d;
```

```
cout << "Enter marks";
```

```
cin >> a >> b >> c;
```

```
d = (a + b + c) / 3;
```

```
cout << "Percentage = " << d << endl;
```


b) Draw a flowchart and write a C++ program to calculate energy needed to heat water from an initial temperature to a final temperature. The user will enter the water amount (in kilograms) and its initial and final temperature. The formula to compute the energy is:

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

where M is the weight of the water (in kilograms), temperature are in Celsius and energy Q is measured in joules.

```
#include <iostream>
#include <string>
using namespace std;
int main () {
    int a, b, c, d;
    cout << "Enter the water: ";
    cin >> a;
```


cout << "initial temperature:";

cin >> b;

cout << "final temperature:";

cin >> c;

d = a * (c - b) / 4184;

cout << "The energy:" << d;

return 0; }

Flow Chart

