CLASSWORK APPLICATIONS FOR FUNCTIONS-PART 1

Q1. Write a program that include a function with a name of Carea to calculate the area of a circle. The radius of the circle must be read in the main function.

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

double Carea(double r){
    return M_PI*r*r;
    }

    int main(){
        double r;
        cout<<"enter radius of circle \n";
        cin>>r;
        cout<<"Area of circle is "<<Carea(r);
    }
```

Q2. Write a main function and programmer defined function that gives the sum of its two double parameters.

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

double Sum(double a, double b){
    return a+b;
    }

    int main(){
        double x,y;
        cout<<"enter two number \n";
        cin>>x>>y;
        cout<<x<<"+"<<y<<"= "<<Sum(x,y);
    }
```

*You can directly show the result in the programmer defined function by using “void“ function type.

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

void sum(double a,double b){

        cout<<a+b;
    }

    int main(){
        double a,b;
        cout<<"enter two numbers \n";
        cin>>a>>b;
        sum(a,b);
    }
```

Q3. Write a function that calculate the power of a given number. Don't use the pow( ) function. The function prototype is given as follows.

double power(double number, int po);

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

double power(double number, int po){
    double a=1;
    for (int i=1;i<=po;i++){
        a=a*number;
    }
    return a;
}

    int main(){
        double n,p;
        cout<<"enter number and its power \n";
        cin>>n>>p;
        cout<<n<<" power "<<p<<"= "<<power(n,p);
    }
```

Q4. Write a program that defines a function to return the maximum absolute value of two double variable types.

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

double mabs(double a, double b){
if (a>b) {
    return b;
}
else    return a;
}
    int main(){
        double a,b;
        cout<<"enter two number \n";
        cin>>a>>b;
        cout<<"Maximum absolute value="<<mabs(a,b);
    }
```

Q5. Write a program that include a function with a name of Ptriangle to calculate the perimeter of a right triangle. The base and height of triangle must be read in the main function.

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

double Ptriangle(double base, double height){
    double hypotenus;
    hypotenus=sqrt(base*base+height*height);
    return base+height+hypotenus;
}
    int main(){
        double a,b;
        cout<<"enter lenght of base and height of rigth triangle \n";
        cin>>a>>b;
        cout<<"Perimeter="<<Ptriangle(a,b);
    }
```

Q6. Write a programmer-defined C++ function QSQRT(X) that returns a value according to the following rules:

$X^{1/2}$ for $X > 0$

Zero for $X = 0$

$-(-X)^{1/2}$ for $X < 0$

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

double QSQRT(double x){
        if (x>0) return pow(x,0.5);
        else if(x==0) return 0;
        else return -1*pow(-1*x,0.5);

}
    int main(){
        double a;
        cout<<"enter a number \n";
        cin>>a;
        cout<<QSQRT(a);
    }
```

Q7. Write a main function and programmer defined function to calculate the function (given below). x must be given in the main function. <u>The value of function must be displayed in the main function.</u>

$$f(x) = 2 + 5x + 3x^2 + 7x^3$$

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

double function(double x){
        return 2+5*x+3*x*x+7*x*x*x;
    }

    int main(){
        double x;
        cout<<"enter x value of function \n";
        cin>>x;
        cout<<"f("<<x<<")= "<< function(x);
    }
```