**Set A**

**This Set Contains TWO Questions. Students must attempt ALL TWO questions.**

**Each question carries 2.5 marks.**

Q1] Write a class **Sphere** with variable **radius** which includes functions that calculate and return the volume and surface’s area. Implement **accessor** to show the length of radius the user has input and **mutator** to set the value the user has input in your program.

Your program should **ask the user to input the side of radius** and **validate** the side the user has input(implement loop).

**Sample output:**

Enter the radius of sphere : -10

Invalid input! Please input again.

Enter the radius of sphere : 2

Following are the details of the sphere:

The length of radius is : 2

Sphere Volume : 33.51

Sphere Area : 50.27

Formula:

Cube’s Surface Area = 4 x x radius x radius = 4 r2

Cube’s Volume = 4/3 x x radius x radius x radius = 4/3 r3

Q2] Write a program to find the **greatest** of three numbers of an array and find out whether that number is **even or odd**. Your program should **validate** the input sent in array. Use functions

1) to input the items in array and 2) find the largest element in array

**Sample output:**

Enter three numbers:

10

20

30

30 is the largest

30 is even

**Set B**

**This Set Contains TWO Questions. Students must attempt ALL TWO questions.**

**Each question carries 2.5 marks.**

Q1] Write a class **Cuboid** with variable **length, breadth and height** which includes functions that calculate and return the volume and surface’s area. Implement **accessor** to show the length of side the user has input and **mutator** to set the value the user has input in your program.

Your program should **ask the user to input the sides of Cuboid** and **validate** the side the user has input(implement loop).

**Sample output:**

Enter the sides of Cuboid :

Length: -10

Breadth: -10

Height: -10

Invalid input! Please input again.

Enter the sides of Cuboid :

Length: 2

Breadth: 2

Height: 2

Following are the details of the cube:

Length: 2

Breadth: 2

Height: 2

Cuboid volume : 8

Cuboid Area : 24

Formula:

Cuboid Surface Area = 2(lb+bh+lh)

CuboidVolume = lbh

Q2] Write a program by including pointer implementation of array and use following functions

1. which asks user to input sales figures for 3 days
2. which calculates and shows the total sales and average for 3 days.

Also implement **Dynamic memory allocation** and **deallocation** using **pointers**

**Set A**

**This Set Contains TWO Questions. Students must attempt ALL TWO questions.**

**Each question carries 2.5 marks.**

Q1] Write a class **Cube** with variable **side** which includes functions that calculate and return the volume and surface’s area. Implement **accessor**  to show the length of side the user has input and **mutator** to set the value the user has input in your program.

Your program should **ask the user to input the side of cube** and **validate** the side the user has input(implement loop).

**Sample output:**

Enter the side of cube : -10

Invalid input! Please input again.

Enter the side of cube : 2

Following are the details of the cube:

The length of side is : 2

Cube volume : 8

Cube Area : 24

Formula:

Cube’s Surface Area = 6 x side x side = 6a2

Cube’s Volume = side x side x side = a3

Q2] Write a program to **swap two numbers** using **pass by value** **AND** **pass by reference** using pointers.

Your program should include two functions calls, one for pass by reference and another for pass by value.

**Set B**

**This Set Contains TWO Questions. Students must attempt ALL TWO questions.**

**Each question carries 2.5 marks.**

Q1] Write a class **Cylinder** with variable **radius, height** which includes functions that calculate and return the volume and surface’s area. Implement **accessor** to show the length of radius the user has input and **mutator** to set the value the user has input in your program.

Your program should **ask the user to input the side of radius, height** and **validate** the side the user has input(implement loop).

**Sample output:**

Enter the radius of cylinder : -10

Enter the height of cylinder : -10

Invalid input! Please input again.

Enter the radius of cylinder : 2

Enter the height of cylinder : 2

Following are the details of the sphere:

The length of radius is : 2

Height of the cylinder is : 2

Sphere Volume : 25.3

Sphere Area : 50.27

Formula:

Cube’s Surface Area = 2 x x radius(height +radius) = 2 r ( h + r)

Cube’s Volume = x radius x radius x height = r2 h

Q2] Write a program to find the smallest of three numbers of an array and find out whether that number is **prime or not**. Your program should validate the input sent in array. Use **functions** 1) to input the items in array and 2) find the smallest element in array

**Sample output:**

Enter three numbers:

7

20

30

7 is the smallest

7 is prime