

Object Oriented Programming (OOP)

Question Paper 3

1. Write down the answers.

(a). Define the class for the following code:

```
int main()
{
    People p1;
    People p2;
    p2.display();
    return 0;
}
```

Ans.: Here is the definition of the given class:

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

class People
{
    string name;
    int age;

public:
    People()
    {
        name = "Unknown";
        age = 0;
    }

    void display()
    {
        cout << name << " " << age << endl;
    }
};

int main()
```

```

{
    People p1;
    People p2;
    p2.display();
    return 0;
}

```

(b). How can you access the private variable data of the class Item outside of the class? Write the code:

```

class Item{
    private:
        int data;
};

```

Ans.: We can define a public setter and getter function to access the private variable. Here is an example code:

```

#include <iostream>
using namespace std;

class Item
{
    private:
        int data;

    public:
        void setData(int d)
        {
            data = d;
        }

        int getData()
        {
            return data;
        }
};

int main()

```

```

{
    Item i;
    i.setData(42);
    cout << i.getData() << endl;
    return 0;
}

```

(c). Define the functions of Rectangle class outside the class:

```

class Rectangle{
    public:
        int length, width;
        void setData(int l, int w);
        void showArea();
}

```

Ans.: We can define the functions outside the class using the following syntax:

```

#include <iostream>
using namespace std;

class Rectangle
{
public:
    int length, width;
    void setData(int l, int w);
    void showArea();
};

void Rectangle::setData(int l, int w)
{
    length = l;
    width = w;
}

void Rectangle::showArea()
{
    cout << length * width << endl;
}

```

```
int main()
{
    Rectangle r1;
    r1.setData(10, 20);
    r1.showArea();
    return 0;
}
```

2. Write down the code for solving the given problems.

(a). Design a Product class:

- The class should have attributes for its name, price, and quantity. Implement a function called `setProduct()` within the class to input the product details from the user. Additionally, create a function named `printProduct()` to display the product details.
- Ensure that `setProduct()` is not directly called in the `main()` function. Add a destructor to print “**Product object destroyed**” when an object is destroyed.

Ans.:

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

class Product
{
    string name;
    float price;
    int quantity;

public:
    Product(string n, float p, int q)
    {
        setProduct(n, p, q);
    }

    ~Product()
    {
        cout << "Product object destroyed" << endl;
    }
}
```

```

    }

    void setProduct(string n, float p, int q)
    {
        name = n;
        price = p;
        quantity = q;
    }

    void printProduct()
    {
        cout << "Name:      " << name << endl;
        cout << "Price:     " << price << endl;
        cout << "Quantity: " << quantity << endl;
    }
};

int main()
{
    Product p("Biscuits", 10.00, 1);
    p.printProduct();
    return 0;
}

```

(b). Create a Student class:

- It should have attributes such as name, roll number, class, and marks. Implement a parameterized constructor allowing the specification of these attributes.
- If any attribute is not provided, use a default constructor to set the values: name = "Unknown", roll number = 0, class = "Not Assigned", and marks = 0.0.

Ans.:

```

#include <iostream>
using namespace std;

class Student
{
    string name;
    int rollNumber;

```


