1. Define a class student with the following specification

Private members of class student

admno	integer
sname	20 character
eng. math, science	float
total	float
ctotal()	a function to calculate eng + math + science with float return type.

Public member function of class student

Takedata()	Function to accept values for admno, sname, eng, science and invoke ctotal() to calculate total.
Showdata()	Function to display all the data members on the screen.

Ans.

```
#include<iostream>
using namespace std;
class student
{
    private:
        int admno;
        char sname[20];
        float eng,math,science,total;
        float ctotal()
        {
            return ( eng + math + science);

        }

    public:

    void Takedata()
    {
        cout<<"\nEnter Addmission number: ";
        cin>>admno;
        cout<<"\nEnter name of the student: ";
        cin>>sname;
        cout<<"Enter marks for English, Maths and Science: ";
        cin>>eng>>math>>science;
        total=ctotal();
    }
    void Showdata()
    {
        cout<<"\nAddmission number: "<<admno;
        cout<<"\nStudent Name: "<<sname;
        cout<<"\nTotal Marks scored: "<<total;
    }
};
    int main()
    {
```

```
        student s;
        s.Takedata();
        s.Showdata();
    }
```

2. Define a class batsman with the following specifications:

Private members:

bcode	4 digits code number
bname	20 characters
innings, notout, runs	integer type
batavg	it is calculated according to the formula – batavg =runs/(innings-notout)
calcavg()	Function to compute batavg

Public members:

readdata()	Function to accept value from bcode, name, innings, notout and invoke the function calcavg()
displaydata()	Function to display the data members on the screen.

Ans.

```
#include<iostream>
using namespace std;
class Batsmen
{
    private :
    int notout, innings, runs,batAvg;
    char bname[20];
    int bcode;

    int calcavg()
    {
        batAvg= runs/(innings-notout);
        return batAvg;
    }
    public:
        void Takedata();
        void DisplayData ();


};
    void Batsmen::Takedata()
    {
        while (true)
        {
            cout<<"\nEnter your Code: "; cin>>bcode;
            if(bcode>999 && bcode<=9999)
            {
                break;
            }
            else {cout<<"\nEnter correct code";}
        }
```

```
        cout<<"\n Enter Your Name: ";cin>>bname;
        cout << "\n Enter Inning and Not Outs: " ;
        cin >> innings >> notout;
        cout <<" \n Enter Runs Scored: " ;
        cin >> runs;
        calcavg();
    }
    void Batsmen::DisplayData ()
    {
        cout << "Batting Information for "<<endl;
        cout << "Code Number:" << bcode << endl;
        cout << "Name :" << bname << endl;
        cout << "Innings :" << innings << endl;
        cout << "Notouts :" << notout << endl;
        cout << "Run Scored: " <<runs << endl;
        cout<<"Batsmen Avrage: "<< batAvg << endl;
    }
    int main()
    {
        Batsmen b;
        b.Takedata();
        b.DisplayData();
    }
```

3. Define a class TEST in C++ with following description:

Private Members TestCode
of type integer Description of
type string NoCandidate of
type integer
CenterReqd (number of centers required) of type integer
A member function CALCNTR() to calculate and return the number of centers as (NoCandidates/100+1)

Public Members

- A function SCHEDULE() to allow user to enter values for TestCode, Description, NoCandidate & call function CALCNTR() to calculate the number of Centres
A function DISPTEST() to allow user to view the content of all the data members

Ans.

```
#include<iostream>
using namespace std;
class TEST
{
    private:
        int TestCode;
        string Description;
        int NoCandidate,a;
        int CenterReqd;
        int CALCNTR()
        {
            return (NoCandidate/100+1);
```

```
        }
        public :
        void Schedule()
        {
            cout<<"\nEnter test code: ";
            cin>>TestCode;
            cout<<"\nEnter the Description: ";
            cin>>Description;
            cout<<"\nEnter the total Canditates: ";
            cin>>NoCandidate;
            a = CALCNTR();
        }
        void DISPTEST()
        {
            cout<<"\nTest code: "<<TestCode;
            cout<<"\nDescription: "<<Description;
            cout<<"\nTotal Canditates: "<<NoCandidate;
            cout<<"\nNo. of centers: "<<a;
        }
};
    int main()
    {
        TEST t;
        t.Schedule();
        t.DISPTEST();
    }
```

4. Define a class in C++ with following description:

Private Members

A data member Flight number of type integer A
data member Destination of type string
A data member Distance of type float A
data member Fuel of type float
A member function CALFUEL() to calculate the value of Fuel as per the following criteria

Distance	Fuel
<=1000	500
more than 1000 and <=2000	1100
more than 2000	2200

Public Members

A function FEEDINFO() to allow user to enter values for Flight Number, Destination, Distance & call function CALFUEL() to calculate the quantity of Fuel A function SHOWINFO() to allow user to view the content of all the data members

Ans.

```
#include<iostream>
using namespace std;
class flight
{
```

```
    private:
        int Flight_number;
        string Destination;
        float Distance, Fuel,a;
        float CALFUEL()
        {
            if (Distance<=1000)
            {
                Fuel= 500;
                cout<<Fuel;
            }
            else if (Distance<1000 && Distance<=2000)
            {
                Fuel= 1100;
                cout<<Fuel;
            }
            else Fuel= 2200;
                cout<<Fuel;
                return Fuel;
        }
    public:
        void FEEDINFO()
        {
            cout<<"\nEnter the Flight Number: ";
            cin>>Flight_number;
            cout<<"\nEnter the Destination: ";
            cin>>Destination;
            cout<<"\nEnter the Distance: ";
            cin>>Distance;
            a = CALFUEL();
        }
        void SHOWINFO()
        {
            cout<<"\nFlight Number: "<<Flight_number;
            cout<<"\nDestination: "<<Destination;
            cout<<"\nDistance: "<<Distance;
            cout<<"\nFuel: "<<a;
        }
};
int main()
{
    flight f;
    f.FEEDINFO();
    f.SHOWINFO();
}
```

5. Define a class BOOK with the following specifications :

Private members of the class BOOK are

BOOK NO integer type

BOOKTITLE 20 characters
PRICE float (price per copy)
TOTAL_COST() A function to calculate the total cost for N number of copies where N is passed to the function as argument.
Public members of the class BOOK are
INPUT() function to read BOOK_NO. BOOKTITLE, PRICE
PURCHASE() function to ask the user to input the number of copies to be purchased. It invokes TOTAL_COST() and prints the total cost to be paid by the user.

Note : You are also required to give detailed function definitions.

Ans.

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

class BOOK {
private:
    int BOOK_NO;
    char BOOKTITLE[20];
    float PRICE;
    void TOTAL_COST(int N)
    {
        float total_cost = PRICE * N;
        cout << "The total cost to be paid by the user is " << total_cost <<
"." << endl;
    }

public:

    void INPUT() {
        cout << "Enter BOOK_NO: ";
        cin >> BOOK_NO;
        cout << "Enter BOOKTITLE: ";
        cin >> BOOKTITLE;
        cout << "Enter PRICE: ";
        cin >> PRICE;
    }

    void PURCHASE() {
        int N;
        cout << "Enter the number of copies to be purchased: ";
        cin >> N;
        TOTAL_COST(N);
    }
};

int main() {
    BOOK b;
    b.INPUT();
    b.PURCHASE();
```

```
}
```

6. Define a class REPORT with the following specification:

Private members :

adno	4 digit admission number
name	20 characters
marks	an array of 5 floating point values
average	average marks obtained
GETAVG()	a function to compute the average obtained in five subject

Public members: READINFO() function to accept values for adno, name, marks. Invoke the function GETAVG()
DISPLAYINFO() function to display all data members of report on the screen. You should give function definitions.

Ans.

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

class REPORT
{
    private:
        int adno;
        char name[20];
        float marks[5];
        float average;

    void GETAVG()
    {
        float sum =0;
        for (int i = 0; i < 5; i++)
        {
            sum = sum + marks[i];
        }
        average = sum/5;
    }
    public:

    void READINFO()
    {
        cout << "\nEnter Admission Number: ";
        cin >> adno;
        cout << "\nEnter the name: ";
        cin >> name;
        cout << "\nEnter marks for five subjects: ";
        for (int i = 0; i < 5; i++)
        {
            cin >> marks[i];
        }
        GETAVG();
    }
```

```
    void DISPLAYINFO()
    {
        cout << "\nAdmission Number: "<<adno;
        cout << "\nName: "<<name;
        cout << "\nmarks for five subjects: \n";
        for (int i = 0; i < 5; i++)
        {
            cout<<"\n"<<marks[i];
        }
        cout << "\nAverage marks: "<<average;
    }
};
int main()
{
    REPORT r;
    r.READINFO();
    r.DISPLAYINFO();
}
```