Class XII:: Computer Science C++
Topic: Class and Objects

1 Write the definition for a class called **Rectangle** that has floating point data members length and width. The class has the following member functions:

void setlength(float) to set the length data member

void setwidth(float) to set the width data member

float perimeter() to calculate and return the perimeter of the rectangle

float area() to calculate and return the area of the rectangle

void show() to display the length and width of the rectangle

int sameArea(Rectangle) that has one parameter of type Rectangle. sameArea returns 1 if the two Rectangles have the same area, and returns 0 if they don't.

1. Write the definitions for each of the above member functions.
2. Write main function to create two rectangle objects. Set the length and width of the first rectangle to 5 and 2.5. Set the length and width of the second rectangle to 5 and 18.9. Display each rectangle and its area and perimeter.
3. Check whether the two Rectangles have the same area and print a message indicating the result. Set the length and width of the first rectangle to 15 and 6.3. Display each Rectangle and its area and perimeter again. Again, check whether the two Rectangles have the same area and print a message indicating the result.

2 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.

3 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.

4 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.

5 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

6 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.

7 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.