CLASS & OBJECTS

1. Define a class student with the following specification:

Private members

admno integer type , sname 20 character
eng, math,sci, total float
ctotal( )- A function to calculate the total marks with float return type.

Public members:

takedata ( ) -function to reed admno, sname,eng,math, sci and invoke ctotal( ) to calculate total.
showdata ( ) -to display all the data members on the screen.

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2. Define a class Garments in C++with the following descriptions:

Private Members:

GCode of type string, GType of type string
GSize of type integer, GFabric of type string
GPrice of type float
A function Assign( ) which calculates and assigns the value of GPrice as follows:

For the value of GFabric as "COTTON",

GType	GPrice(Rs)
TROUSER	1300
SHIRT	1100

For GFabric other than "COTTON" then
GPrice gets reduced by 10%

Public Members :

- A constructor to assign initial values of GCode, GType and GFabric with the word "NOT ALLOTTED" and GSize and GPrice with value as 0.
- A function Input( ) to input the values of the data members GCode, GType, GSize and GFabricl and invoke the Assign( ) function.
- Display( ) which displays the content of all the data members for a Garment.

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3. Define a class named Publisher in C++ with the following descriptions :

Private members

Id long,title 40 char,author 40 char,price,
stockqty double, stockvalue double
valcal()- A function to find price*stockqty with double as return type

Public members

•a constructor function to initialize price , stockqty and stockvalue as 0
•Enter() function to input the idnumber , title and author
•Takestock() function to increment stockqty by N (where N is passed as argument to this function) and call the function valcal() to update the stockvalue().
•Sale() function to decrease the stockqty by N (where N is sale quantity passed to this function as argument) and also call the function valcal() to update the stockvalue
•Outdata() function to display all the data members on the screen.

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4. Define a class named RESULT in C++ with the following descriptions:

Private members:

Rollno– integer number ,Name–String of 20 characters
Subjects- an integer array to store 6 subject marks
Total – integer number,Average– float number

Public members :

•A constructor to initialize the values of data members.
•Function Get_Value ( ) to read the values for all the data members.
•Function Show_Value ( )to show Rollno, Name, Total and Average.
•Function Best_Five ( )to find the average and total marks of top 5 subject marks.

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5. Define a class named Football in C++ with the following descriptions:

Private members:
Team_A, Team_B – Strings of 20 characters
Goal_A, Goal_B – integer numbers
Winner – String of 20 character
Public members :
•A constructor to initialize the values of data members.
•Function Get_Team( ) to read the values for all the data members.
•Function Show_Team( ) to show Team_A, Goal_A, Team_B, Goal_B and Winner.
•Function Champion( ) to assign the value of Winner based on high scoring team.
If both team scored same number of goals assign "Draw".

6. Define a class Serial in C++ with the following description:

Private members

Serialcode int,title 20 char,duration float
no_episodes integer

Public members

> a constructor function to initialize duration as 30 and no_episodes as 10.
>Newserial() function to accept values for Serialcode and title.
> Otherentries() function to assign the values of duration and no_episodes with the help of corresponding values passed as parameters to this function.
> dispdata() function to display all the data members on the screen.

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7. Define a class Travel in C++ with the description given below:

Private members:

plancode of type long,place of type characters array
number_of_travellers of type integer,number_of_buses of type integer

Public members:

> A constructor to assign initial values of plancode as 1001,
place as "Kolkata", number_of_travellers as 5 and number_of_buses as 1
> A function newplan( ) which allows user to enter plancode , place and
number_of_travellers and also assign the number_of_buses as per the following conditions:

number_of_travellers	number_of_buses
less than 20	2
equal to and more than 20 and less than 40	3
equal to and more than 40	4

> A function show( ) to display the contents of all the data members on the screen.

8.Define a class named Cricket in C++ with the following descriptions :

private members

Target_scope, Overs_bowled, Extra_time, Penalty of integer type
cal_panalty() a member function to calculate penalty as follows :

if Extra_time <=10 penalty =1
if Extra_time >10 but <=20 penalty =2
otherwise, penalty =5

public members

•a function extradata() to allow user to enter values for target_score,overs_bowled , extra_time.

•a function dispdata() to follow user to view the contents of all data members.

9. Define a class FLIGHT in C++ with followingdescription:

Private Members

Flight number of type integer, Destination of type string
Distance of type float, 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.

10. Define a class PhoneBill in C++ with the following descriptions.

Private members:

CustomerName of type character array, PhoneNumber of type long, No_of_units of type int,Rent of type int
Amount of type float.
calculate( ) This member function should calculate the value of amount as Rent+ cost for the units.
Where cost for the units can be calculated according to the following conditions.

No_of_units	Cost
First 50 calls	Free
Next 100 calls	0.80 @ unit
Next 200 calls	1.00 @ unit
Remaining calls	1.20 @ unit

Public members:

*A constructor to assign initial values of CustomerName as “Raju”, PhoneNumber as259461, No_of_units as 50, Rent as 100, Amount as 100.

*A function accept ( ) which allows user to enter CustomerName, PhoneNumber, No_of_units and Rent and should call function calculate ( ).
*A function Display ( ) to display the values of all the data members on the screen.

11. What are differences between private,protected and public access specifiers. Give suitable example of it.

12. How the memory to be allocated in terms of data members and member functions?

13. What do you mean by static data members and static member functions? Give appropriate examples.

Constructors &Destructors

14. Answer the questions (i) and(ii) after going through the following class:

```
class exam
{   int marks;
   char subject[20];
 public:
   Exam()                //function1
      { Marks=0; Strcpy(subject,"computer");}
   Exam (char s[])      //function2
      { Marks=0; strcpy(subject,"s"); }
   Exam(int m)         //function3
      { Marks=m; strcpy(subject,"computer");}
   Exam (char s[],int m)     //function4
       { Marks=m; strcpy(subject,s); }
};
```

(i) Which statement in c++ that would execute function3 and function 4 of class exam.
ii) Which feature of object oriented programming is demonstrated using function 1,function 2,function 3 and function 4 in the above class exam?

15. Answer the following questions as per given code.

```
Class testmeout
{        int rollno;
  public:
        ~testmeout() //Function 1
 { cout<<rollno<<" is Leaving examination hall"<<endl;  }
        testmeout() //Function 2
    { rollno=1;     cout<<rollno<<" is appearing for
      examination "<<endl;   }
   testmeout(int n, char name[]) //Function 3
    { rollno=n;    cout<<name<<" is in examination
      hall"<<endl;   }
    testmeout(testmeout & t);//function 4
    void mywork() //Function 5
   { cout<<rollno<<" is attempting questions "<<endl;   }
};
```

(i) In object oriented programming, what is Function 1 referred as and when does it get invoked?
(ii) In object oriented programming, what is Function 2 referred as and when does it get invoked?
(iii) In object oriented programming, what is Function 3 referred as and when does it get invoked?
(iv) Write a statement so that function 3 gets executed? Complete the definition of function 4
(v) What will be the output of the above code if its main function definition is as given below . (assumed the definition of Function 4 is completed) :

```
   main()
   {    testmeout ob1;
        ob1.mywork();
   }
```

(vi) Which feature of object oriented programming is demonstrated using Function 2, Function 3 and Function 4 in the above class testmeout?
(vii) What is the scope of data member (rollno) of class testmeout? What does the scope of data members depend upon?

16.Answer the questions(i) and (ii) after going through the following program :

```
class number
{    float M;
     char str[25];
public:
    number( ) //constructor 1
    { M=0;       str='\0';}
  number(number &t); //constructor 2
};
```

1.Write c++ statement such that it invokes constructor1
2. Complete the definition for constructor 2.

17. Answer the following questions after going through following code.

```
 class Cellphone
  {    long  IMEINO;     char  Manufacture[15];
     public:
```

```
Cellphone( )   // Function1
 { IMEINO=123456789 ; strcpy( Manufacture,"NOKIA"); }
   Cellphone(long  INO, char Mfc)    // Function2
     {  IMEINO=INO;   Manufacture=Mfc;   }
   Cellphone(  Cellphone &CP)      // Function3
    {  IMEINO= CP.IMEINO;
       Manufacture=CP.Manufacture;
    }
   ~Cellphone( )   // Function 4
    {  cout<<" Cellphone Sold";  }
 };
```

(1) If you want to invoke function 2 and function 3, write the statements required to do the same. Also give a memory size occupied by data members of corresponding functions execution.

(2) When the function4 to be invoked? Give advantage of function4.

18. Answer the questions (i) and (ii) after going through the following class:

```
class mammal
{  public:
    char category[20];
    mammal( char xname[])              // function1
      {    strcpy(category, xname);    }
    mammal(mammal &t);                 //function2
 };
```

(i)Create an object, such that it invokesfunction1.

(ii)Write complete definition for function2.

19. Answer the questions (i)and (ii) after going through the following program : 02

```
#include<iostream.h>
 #include<string.h>
class Bazar
  {  char Type[20] ,Product[20] ;
      int qty ;
      float price ;
       Bazar()              //Function 1
       {  strcpy (Type, "Electronic") ;
          strcpy (product, "calculator") ;
           Qty = 10 ;       Price = 225 ;
       }
      public :
void   Disp()              //Function 2
   {    cout << Type << "-" << product << ":" << Qty <<
        "@" << Price << endl ;          }
 } ;
 void main()
  {   Bazar B :                //Statement 1
      B. Disp() ;              //Statement 2
  }
```

(i) Will Statement 1 initialize all the data members for object B with the values given in the function 1?

(Yes OR No). Justify your answer suggesting the correction(s) To be made in the above code.

(ii) What shall be the possible output when the program gets executed?

(Assuming, if required – the suggested correction(s) are made in the program)

20. Answer the questions (i) and (ii) after going through the following class :

```
 class Interview
 {   int Month ;
   public :
      Interview(int Y) { Month = Y ;}       //Constructor 1
       Interview(Interview & t) ;            //Constructor 2
   };
```

(i)Create an object, such that it invokes Constructor 1.

(ii) Write complete definition fo Constructor 2.

21. Answer the questions (i) and (ii) after going through the following class:

```
class player
{     int health, age;
    public:
     player()  { health=6; age=18 }   //Constructor1
  player(int s, int a) {health =s; age = a ; } //Constructor2
   player( player &p)   //Constructor3
    { }
 ~player() { cout<<"Memory Deallocate"; }   //Destructor
};
void main()
{   player p1(7,24);   //Statement1
    player p3 = p1;    //Statement3
}
```

(i) When p3 object created specify which constructor invoked and why?

(ii) Write complete definition for Constructor3?

22. Answer the questions (i) and (ii) after going through the following class :

```
class ROOM
 {   int l;  int w;  int h;
public:
    ROOM()                  // function 1
      {    l=0;     w=0;      h=0;  }
   ROOM(int x)              // function 2
    {   l=x;     w=x;     h=x;  }
   ROOM(int x, int y, int z)   // function 3
    {    l=x;      w=y;       h=z;  }
  ~ROOM(int x, int y, int z)   // function 4
   {  }
};
```

1. In Object Oriented programming, what is function 2 referred as and when does it get invoked/called ? Write suitable code for calling.

2. In Object Oriented Programming, what is function 4 referred as and when does it get invoked/called? Write suitable code for calling.

23. Answer the question (i) and (ii) after going through the following class :

```
class Animal
 {    int Age;
   public :
      Animal ( )      // Function 1
      {   Age= 0;
         cout<< " Animal Detail" << endl;
       }
     void Details ( )  // Function 2
      {     cout<< " Wild Animall" << endl;    }
    Animal( int D)   // Function 3
      {      Age = D;    }
    Animal(Animal &M)   // Function 4
      {     Age = M.Age ;   }
  };
```

(i) Which category of constructor – Function 4 belongs to and what is the purpose of using it ?

(ii) Write the statements that would call the member Functions 1 and 3.

24. Answer the question (i) and (ii) after going through the following class :

```
#include<iostream.h>
#include<string.h>
class Gulfair
{
    char flightno[5];
     int   no_of_passengers;
public:
    Gulfair()                          //function1
      {  strcpy(flightno,str);    no_of_passengers=0;    }
   Gulfair(char str,int n)             //function2
   {  strcpy(flightno,str);       no_of_passengers=n;   }
   void input()                        //function3
   {  cin>>flightno:    cin>>no_of_passengers;   }
  ~Gulfair()
    {  cout<<"counter closed"};        //function4
```

(i) In an object oriented programming , which concept is illustrated by function1 and function 2 together? Write the statements to call these function

(ii) What is the scope of the two data members of the class Gulfair? What does scope of data members depend on?

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25. Answer questions 1 and 2 after going through the following class

```
 class game
  {      char name[20];
          int players;
   public:
        game (int, char*);              // MODULE 1
        game (game&);                   // MODULE 2
        ~game( );                       // MODULE 3

  };
```

1. Define MODULE 2 outside the class.
2. What is MODULE 3 known as? Which OOP concept do they imply?

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26. Answer the questions (i) and(ii) after going through the following class:

```
class exam
  {   int marks;
      char subject[20];
   public:
    Exam()                          //function1
      {   Marks=0;
          Strcpy(subject,"computer");
      }
    Exam (char s[])                 //function2
      {   Marks=0;
          strcpy(subject,"s");
       }
    Exam(int m)                     //function3
    {    Marks=m;
        strcpy(subject,"computer");
     }
   Exam (char s[],int m)                //function4
      {
         Marks=m;
         strcpy(subject,s);
      }
  };
```

(i) Which statement in c++ that would execute function3 and function 4 of class exam.

ii) Which feature of object oriented programming is demonstrated using function 1,function 2,function 3 and function 4 in the above class exam?

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27. What do mean by constructor and destructor? Give a suitable examples of it.

28. Differentiate between Copy constructor and parameterized constuctor. Give examples of it.

29. Define constructor overloading and give example of it.

30. What is the advantage of constructor with default argument .Give an appropriate examples of it.