UNIT 1 : Programming in C++

1 Mark Questions

1. Observe the program segment carefully and answer the question that follows:

```
class member
{
int member_no;
        char member_name[20];
public:
        void enterDetails( );
        void showDetail( );
int getMember_no( ){ return member_no;}
};
void update(member NEW )
{
fstream File;
File.open( "member.dat", ios::binary|ios::in|ios::out) ;
member i;
while(File .read((char*) & i , sizeof (i)))
{
        if(NEW . getMember_no( ) = = i . getMember_no( ))
        {
        File seekp( _____ , ios::cur ) //Paremeter Missing
        File write((char*) &NEW , sizeof (NEW));
        }
}
File.close() ;
}
```

If the function update( ) is supposed to modify a record in the file " member.dat" with the values of member NEW passed as argument, write the appropriate parameter for the missing parameter in the above code, so as to modify record at its proper place.

2. Observe the program segment given below carefully, and answer the question that follows:

```
class Applicant
{
long Aid; //Applicant's Id
char Name[20]; //Applicant's Name
float Score, //Applicant's Score
public:
void Enroll();
void Disp();
void MarksScore(); //Function to change Score
long R_Aid() {return Aid;}
};
void ScoreUpdate(long Id)
{
fstream File,
File open("APPLI.DAT",ios::binary|ios::in|ios::out);
Applicant A,
int Record=0,Found=0,
while (!Found&&File.read((char*)&C, sizeof(c)))
```

```
{
if (Id==A.R_Aid())
{
cout<<"Enter new Score... ";
cin>>A.MarksScore();
_____ //statement 1
_____ //statement 2
Found = 1;
}
Record++;
}
if(Found==1) cout<<"Record Updated";
File.close();
}
```

Write the Statement1 to position the File Pointer at the beginning of the Record for which the Applicant's Id matches with the argument passed, and Statement2 to write the updated Record at that position.

3. Observe the program segment carefully and answer the question that follows:

```
class student
{
int student_no;
char student_name[20];
int mark;
public:
void enterDetail( );
void showDetail( );
void change_mark( ); //Function to change the mark
int getStudent_no( ){ return student_no;}
};
void modify( int y )
{
fstream File;
File.open( "student.dat", ios::binary|ios: in|ios::out) ;
student i;
int recordsRead = 0, found = 0;
while(!found && File .read((char*) & i , sizeof (i)))
{
recordsRead++;
if(i . getStudent_no( ) = = y )
{
i . change_mark( );
_____//Missing statement 1
_____//Missing statement 2
found = 1;
}
}
if( found = = 1)
cout<<"Record modified" ;
File.close() ;
}
```

If the function modify( ) is supposed to change the mark of a student having student_no y in the file "student.dat", write the missing statements to modify the student record.

4. Observe the program segment carefully and answer the question that follows:

```
class item
{
int item_no;
char item_name[20];
public:
void enterDetail( );
void showDetail( );
Int getItem_no( ){ return item_no;}
};
void modify(item x, int y )
{
fstream File;
File.open( "item.dat", ios::binary | ios::in | ios::out) ;
item i;
int recordsRead = 0, found = 0;
while(!found && File.read((char*) &i , sizeof (i)))
{
recordsRead++;
if(i . getItem_no( ) = = y )
{
_____//Missing statement
File.write((char*) &x , sizeof (x));
found = 1;
}
}
if(! found)
cout<<"Record for modification does not exist" ;
File.close() ;
}
```

If the function modify( ) is supposed to modify a record in the file " item.dat ",which item_no is y, with the values of item x passed as argument, write theappropriate statement for the missing statement using seekp( ) or seekg( ),whichever is needed, in the above code that would write the modified record at its proper place.

5 Observe the program segment carefully and answer the question that follows:

```
class member
{
int member_no;
char member_name[20];
public
void enterDetail( );
void showDetail( );
int getMember_no( ){ return member_no;}
};
void update(member NEW )
{
fstream File;
File.open( "member.dat", ios::binary|ios::in|ios::out) ;
member i;
while(File .read((char*) & i , sizeof (i)))
{
if(NEW . getMember_no( ) = = i . getMember_no( ))
{
```

```
_____//Missing statement
File.write((char*) &NEW , sizeof (NEW));
}
}
File.close() ;
}
```

If the function update( ) is supposed to modify the member_name field of a record in the file " member.dat" with the values of member NEW passed as argument, write the appropriate statement for the missing statement using seekp( ) or seekg( ), whichever is needed, in the above code that would write the modified record at its proper place.

6. Observe the program segment carefully and answer the question that follows:

```
class item
{
int item_no;
char item_name[20];
public:
void enterDetails( );
void showDetail( );
int getItem_no( ){ return item_no;}
};
void modify(item x )
{
fstream File;
File.open( "item.dat", _____ ) ; //parameter missing
item i;
while(File .read((char*) & i , sizeof (i)))
{
if(x . getItem_no( ) = = i . getItem_no( ))
{
File.seekp(File.tellg( ) – sizeof(i));
File.write((char*) &x , sizeof (x));
}
else
File.write((char*) &i , sizeof (i));
}
File.close() ;
}
```

If the function modify( ) modifies a record in the file " item.dat " with the values of item x passed as argument, write the appropriate parameter for the missing parameter in the above code, so as to modify record at its proper place.

7. Observe the program segment carefully and answer the question that follows:

```
class item
{
int item_no;
char item_name[20];
public:
void enterDetail( );
void showDetail( );
int getItem_no( ){ return item_no;}
};
void modify(item x )
{
fstream File;
```

```
File.open( "item.dat", ios::binary|ios::in|ios::out ) ;
item i;
while(File .read((char*) & i , sizeof (i)))//Statement 1
{
if(x . getItem_no( ) = = i . getItem_no( ))
{
File.seekp(File.tellg( ) – sizeof(i));
File.write((char*) &x , sizeof (x));
}
}
File.close() ;
}
```

If the function modify( ) modifies a record in the file " item.dat" with the values of item x passed as argument, rewrite statement 1 in the above code using eof( ) ,so as to modify record at its proper place.

8.. Observe the program segment given below carefully and fill the blanks marked as Statement 1 and Statement 2 using seekp() and seekg() functions for performing the required task.

```
#include <fstream.h>
class Item
{
int Ino;char Item[20];
public:
//Function to search and display the content from a particular record number
void Search(int );
//Function to modify the content of a particular record number
void Modify(int);
};
void Item::Search(int RecNo)
{
fstream File;
File.open("STOCK.DAT",ios::binary| ios::in);
_____ //Statement 1
File.read((char*)this,sizeof(Item));
cout<<Ino<<"==>"<<Item<<endl;
File.close();
}
void Item::Modify(int RecNo)
{
fstream File;
File.open("STOCK.DAT",ios::binary|ios::in|ios::out);
cout>>Ino;
cin.getline(Item,20);
_____ //Statement 2
File.write((char*)this,sizeof(Item));
File.close();
}
```

9. Observe the program segment given below carefully and fill the blanks marked as Statement 1 and Statement 2 using seekg() and tellg() functions for performing the required task.

```
#include <fstream.h>
class Employee
{
int Eno;char Ename[20];
public:
//Function to count the total number of records
```

```
int Countrec();
};
int Item::Countrec()
{
11
fstream File;
File.open("EMP.DAT",ios::binary|ios::in);
_____ //Statement 1- To take the file pointer to
//the end of file.
int Bytes =
_____ //Statement 2-To return total number of
bytes from the beginning of
file to the file pointer.
int Count = Bytes / sizeof(Item);
File.close();
return Count;
}
```

1. A file named as "STUDENT.DAT" contains the student records, i.e. objects of class student.Write the command to open the file to update a student record. (Use suitable stream class and file mode(s).
2. A file named as "EMPLOYEE.DAT" contains the employee records, i.e. objects of class employee.Assuming that the file is just opened through the object FILEof fstream class, in the required file mode, write the command to position the putpointer to point to fifth record from the last record.
3. A file named as "EMPLOYEE.DAT" contains the student records, i.e. objects of class employee. Assuming that the file is just opened through the object FILE of fstream class, in the required File mode, write the command to position the get pointer to point to eighth record from the beginning.

2 Marks Questions
Programming in C++

1. Rewrite the following program after removing the syntactical errors (if any). Underline each correction.

```
#include [iostream.h]
class MEMBER
{
        int Mno;float Fees;
        PUBLIC:
                void Register(){cin>>Mno>>Fees;}
                void Display{cout<<Mno<<" : "<<Fees<<endl;}
};
void main()
{
MEMBER M;
Register();
M.Display();
}
```

2. Rewrite the following program after removing the error(s), if any. Underline each correction.

```
#include <iostream.h>
void main( )
{
int x, sum =0;
cin>>n;
for (x=1;x<100, x+=2)
if x%2=0
sum+=x;
cout<< "sum=" >>sum;
}
```

3. Rewrite the following codes after removing errors, if any, in the following snippet. Explain each error.

```
#include<iostream.h>
void main( )
{
int x[5], *y, z[5]
for (i = 0; i < 5; i ++
{
x[i] = i;
z[i] = i + 3;
y = z;
x = y;
}
```

4. Rewrite the following program after removing the error(s), if any. Underline each correction.

```
#include <iostream.h>
void main( )
{
int x, sum =0;
cin>>n;
for (x=1;x<100, x+=2)
if x%2=0
sum+=x;
cout<< "sum=" >>sum;
}
```

5. Rewrite the following program after removing the syntactical error(s), if any Underline each correction:

```
#include <iostream.h>
```

```
void main( )
{
struct Book
{
char Book_name[20];
char Publisher_name[20];
int Price = 170;
} New Book;
gets(Book_name);
gets(Publisher_name);
}
```

6. Will the following program execute successfully? If no, state the reason(s) :

```
#include<iostream.h>
#include<stdio.h>
#define int M=3;
void main( )
{
const int s1=10;
int s2=100;
char ch;
getchar(ch);
s1=s2*M;
s1+M = s2;
cout<<s1<<s2 ;
}
```

7. Rewrite the following program after removing the syntactical errors (if any). Underline each correction.

```
#include<iostream.h>
void main()
{
char arr[] = {12, 23, 34, 45};
int ptr = arr;
int val = *ptr; cout << *val << endl;
val = *ptr++; cout << val << endl;
val = *ptr : cout << val >> endl;
val = *++ptr; cout << val << endl;
}
```

8. Rewrite the following program after removing the syntactical error (s), if any. Underline each correction.

```
#include<iostream.h>
const int dividor 5;
void main( )
{ Number = 15;
for(int Count=1;Count=<5;Count++,Number -= 3)
if(Number % dividor = 0)
{
cout<<Number / Dividor;
cout<<endl;
}
else
cout<<Number + Dividor <<endl;
}
```

9 Rewrite the following program after removing the syntactical error(s) if any. Underline each correction.

```
#include<iostream.h>
void main( )
{
```

```
First = 10, Second = 30;
Text(First;Second);
Text(Second);
}
void Text(int N1, int N2 = 20)
{
N1=N1+N2;
count<<N1>>N2;
}
```

10. Rewrite the following program after removing the syntactical error(s) if any. Underline each correction.

```
#include<iostream.h>
const int Max 10;
void main()
{
int Numbers[Max];
Numbers = {20,50,10,30,40};
for(Loc=Max-1;Loc>=10;Loc--)
cout>>Numbers[Loc];
}
```

11. Rewrite the following program after removing the syntactical error(s), if any. Underline each correction.

```
#include<iostream.h>
const int Multiple 3;
void main( )
{
value = 15;
for(int Counter = 1;Counter = <5;Counter ++, Value -= 2)
if(Value%Multiple = = 0)
{
cout<<Value * Multiple;
cout<<end1;
}
else
cout<<Value + Multiple <<endl; }
```

12. Will the following program execute successfully? If not, state the reason(s).

```
#include<stdio.h>
void main( )
{ int s1,s2,num;
s1=s2=0;
for(x=0;x<11;x++)
{
cin<<num;
If(num>0)s1+=num;else s2=/num;
}
cout<<s1<<s2; }
```

13. Identify the errors if any. Also give the reason for errors.

```
#include<iostream.h>
void main()
{
const Int i =20;
const int * ptr=&i;
(*ptr)++;
Int j=15;
ptr =&j;
}
```

14. Identify the errors if any. Also give the reason for errors.

```
#include<iostream.h>
void main()
{
const int i =20;
const int * const ptr=&i;
(*ptr)++;
int j=15;
ptr =&j;
}
```

15. Identify errors on the following code segment

```
float c[ ] ={ 1.2,2.2,3.2,56.2};
float *k,*g;
k=c;
g=k+4;
k=k*2;
g=g/2;
cout<<"*k="<<*k<<"*g="<<*g;
```

16. Write the output of the following program. 2

```
void main( )
{
int x=5,y=5;
cout<<x- -;
cout<<",";
cout<- - x;
cout<<",";
cout<<y- -<<","<<- -y;
}
```

17. Predict the output of the following code:

```
# include<iostream.h>
#include<conio.h>
void main()
{
int arr[] = {12, 23, 34, 45};
int *ptr = arr;
int val = *ptr; cout << val << endl;
val = *ptr++; cout << val << endl;
val = *ptr; cout << val << endl;
val = *++ptr; cout << val << endl;
}
```

18. Find the output of the following code.

```
#include<iostream.h>
#include<conio.h>
void main()
{
int arr[] = {12, 23, 34, 45};
int *ptr = arr;
int val = *ptr; cout << val << endl;
val = *ptr++; cout << val << endl;
val = *ptr; cout << val << endl;
val = *++ptr; cout << val << endl;
val = ++*ptr; cout << val << endl;
}
```

19. Find the output of the following code

```
#include<iostream.h>
#include<conio.h>
void main()
{
int arr[] = {12, 23, 34, 45};
int *ptr = arr;
int val = *ptr; cout << val << endl;
val = (*ptr)++; cout << val << endl;
val = *ptr; cout << val << endl;
val = *++ptr; cout << val << endl;
}
```

20. Write the output of the following program:

```
#include<iostream.h>
#include<conio.h>
void main( )
{
clrscr( );
int a =32;
int *ptr = &a;
char ch = 'A';
char *cho=&ch;
cho+=a; // it is simply adding the addresses.
*ptr + = ch;
cout<< a << "" <<ch<<endl;
}
```

21. Write the output of the following program:

```
#include<iostream.h>
#include<conio.h>
void main( )
{
clrscr( );
int a =32;
int *ptr = &a;
char ch = 'A';
char *cho=&ch;
*cho+=a; // it is adding the values.
cout<< a << "" <<ch<<endl;
}
```

22. Write a function in C++ to print the count of the word the as an independent word in a text file STORY.TXT. For example, if the content of the file STORY.TXT is There was a monkey in the zoo. The monkey was very naughty. Then the output of the program should be 2.

23. Assume a text file "coordinate.txt" is already created. Using this file create a C++ function to count the number of words having first character capital. Example: Do less Thinking and pay more attention to your heart. Do Less Acquiring and pay more Attention to what you already have. Do Less Complaining and pay more Attention to giving Do Less criticizing and pay more Attention to Complementing. Do less talking and pay more attention to SILENCE. Output will be : Total words are 16

24. Write a function in C++ to count the number of lines present in a text file "STORY.TXT".

25. Write a function in C++ to count the number of alphabets present in a text file "NOTES.TXT".

26. Write a function in C++ to write the characters entered through the keyboard into the file"myfile.txt", until a '#' character is entered.

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

```
class Seminar
```

```
{
int Time;
public:
Seminar() //Function 1
{
Time=30;cout<<"Seminar starts now"<<end1;
}
void Lecture() //Function 2
{
cout<<"Lectures in the seminar on"<<end1;
}
Seminar(Int Duration) //Function 3
{
Time=Duration;cout<<"Seminar starts now"<<end1;
}
~Seminar()
//Function 4
{
cout<<"Vote of thanks"<<end1;
}
};
```

i) In Object Oriented Programming, what is Function 4 referred as and when does it get invoked/ called?
ii) In Object Oriented Programming, which concept is illustrated by Function 1 and Function 3 together? Write an example illustrating the calls for these functions.

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

```
#include<iostream.h>
#include<string.h>
class Bazar
{
char Type[20];
char 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)

29. Given a class as follows:

```
class Match
{
int Time;
int Points;
public:
Match(int y, int p) //Conctructor1
{
Time=y;
Points =p;
}
Match(Match &M); // Constructor 2
};
```

(i) Create an object, such that it invokes Constructor 1.
(ii) Write complete definition for Constructor 2.

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

```
class player
{
int health;
int age;
public:
player() { health=7; age=17 } //Constructor1
player(int h, int a) {health =h; age = a ; } //Constructor2
player( player &p) { } //Constructor3
~player() { cout<<"Memory Free"; } //Destructor
};
void main(){
player p1(9,26); //Statement1
player p3 = p1; //Statement3
}
```

(i) When p3 object created specify which constructor invoked and why?
(ii) Write complete definition for Constructor3?

31. Assume that a text file named text1.txt already contains some text written into it, write a function named vowelwords(), that reads the file text1.txt and create a new file named text2.txt, which shall contain only those words from the file text1 txt which don't start with an uppercase vowel(i.e., with 'A','E','I','O','U'). for example if the file text1.txt contains:
Take One Apple And one glass milk daily.
Then the file text2.txt shall contain :
Take one glass milk daily.

32. Assume a text file "Test.TXT" is already created. Using this file, create a function to create three files "LOWER.TXT" which contains all the lowercase vowels and UPPER.TXT" which contains all the uppercase vowels and "DIGIT.TXT" which contains all digits.

33. Write a function in C++ to calculate the average word size in a text file "Report.txt", each word is separated by single space or full stop.

34. Create a function FileLowerShow() in c++ which take file name(text files)as a argument and display its all data into lower case.

4 Marks Questions : Programming in C++

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

Private Members:
T_Code of type string
No_of_Adults of type integer
No_of_Children of type integer
Distance of type integer
TotalFare of type float
Public Members:
A constructor to assign initial values as follows :
T_Code with the word "NULL"
No_of_Adults as 0
No_of_Children as 0
Distance as 0
TotalFare as 0
A function AssignFare( ) which calculates and assigns the value of the data member TotalFare as follows :
For each Adult
Fare (Rs) For Distance (Km)
500 >=1000
300 <1000 & >=500
200 <500
For each Child the above Fare will be 50% of the Fare mentioned in the above table.
For example :
If Distance is 750, No_of_Adults = 3 and No_of_Children = 2
Then TotalFare should be calculated as
No_of_Adults * 300 + No_of_Children * 150
i.e. 3 * 300 + 2 * 150 = 1200
• A function EnterTraveK) to input the values of the data members T_Code, No_of_Adults, No_of_Children and Distance; and invoke the AssignFare( ) function.
• A function ShowTraveK) which displays the content of all the data members for a Travel.

2. Answer the questions (i) to (iv) based on the following code :

```
class CUSTOMER
{
int Cust_no;
char Cust_Name[20];
protected:
void Register();
public:
CUSTOMER();
void Status();
};
class SALESMAN
{
int Salesman_no;
char Salesman_Name[20];
protected:
float Salary;
public:
SALESMAN();
void Enter();
void Show();
```

```
};
class SHOP : private CUSTOMER , public SALESMAN
{
char Voucher_No[10];
char Sales_Date[8];
public:
SHOP();
void Sales_Entry();
void Sales_Detail();
}
```

(iii) Write the names of data members which are accessible from objects belonging to class CUSTOMER.
(iv) Write the names of all the member functions which are accessible from objects belonging to class SALESMAN.
(v) Write the names of all the members which are accessible from member functions of class SHOP.
(iv) How many bytes will be required by an object belonging to SHOP?

3. Answer the questions (i) to (iv) based on the following:

```
class PUBLISHER
{
char Pub[12];
double Turnover;
protected:
void Register();
public:
PUBLISHER();
void Enter();
void Display();
};
class BRANCH
{
char CITY[20];
protected:
float Employees
public:
BRANCH();
void Haveit();
void Giveit();
};
class AUTHOR : private BRANCH , public PUBLISHER
{
int Acode;
char Aname[20];
float Amount;
public:
AUTHOR();
void Start();
void Show();
};
```

(i) Write the names of data members, which are accessible from objects belonging to class AUTHOR.
(ii) Write the names of all the member functions which are accessible from objects belonging to class BRANCH.
(iii) Write the names of all the members which are accessible from member functions of class AUTHOR.
(iii) How many bytes will be required by an object belonging to class AUTHOR?

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 Clothing in C++ with the following descriptions:
Private Members:
Code of type string
Type of type string
Size of type integer
Material of type string
Price of type float
A function Calc_Price() which calculates and assigns the value of Price as follows: For the value of Material as "COTTON"

Type Price (Rs.)
TROUSER 1500
SHIRT 1200

For Material other than "COTTON" the above mentioned Price gets reduced by 25%.
Public Members:
A constructor to assign initial values of Code, Type and Material with the word "NOT ASSIGNED" and Size and Price with 0. A function Enter () to input the values of the data members Code, Type, Size and Material and invoke the CalcPrice() function. A function Show () which displays the content of all the data members for a Clothing.

7 Answer the questions (i) to (iv) based on the following code:

```
class Dolls
{
char DCode[5];
protected:
float Price ;
```

```
void CalcPrice(float);
public:
Dolls( );
void DInput( );
void DShow( );
};
class SoftDolls: public Dolls
{
char SDName[20];
float Weight;
public:
SoftDolls( );
void SDInput( );
void SDShow( );
};
class ElectronicDolls: public Dolls
{
char EDName[20];
char BatteryType[10];
int Battieries;
public:
ElectronicDolls ( );
void EDInput( );
void EDShow( );
};
```

(i) Which type of Inheritance is shown in the above example?
(ii) How many bytes will be required by an object of the class ElectronicDolls?
(iii) Write name of all the data members accessible from member functions of the class SoftDolls.
(iv) Write name of all the member functions accessible by an object.

8 consider the following class declaration and answer the question below :

```
class university {
int noc;
protected;
char uname[25];
public:
university();
char state[25];
void enterdata();
void displaydata();
};
class college:public university{
int nod;
char cname[25];
protected:
void affiliation();
public:
college();
void enrol(int ,int);
void show();
};
class department:public college{
char dname[25];
int nof;
```

```
public:
department();
void display();
void input();
};
```

(i) Which class's constructor will be called first at the time of declaration of an object of class department?
(ii) How many bytes does an object belonging to class department require?
(iii) Name the member function(s), which are accessed from the object of class department.
(iv) Name the data member, which are accessible from the object of class college.

9 Answer the questions(i) to (iv) based on the following :

```
class cloth
{
char category[5];
char description[25];
protected:
float price;
public:
void Entercloth( );
void dispcloth( );
};
class Design : protected cloth
{
char design[21];
protected:
float cost_of_cloth;
public:
int design_code;
Design( );
void Enterdesign( );
void dispdesign( );
};
class costing : public cloth
{
float designfee;
float stiching;
float cal_cp( );
protected:
float costprice;
float sellprice;
public:
void Entercost( );
void dispcost( );
costing ( ) { };
};
```

(i) Write the names of data members which are accessible from objects belonging to class cloth.
(ii) Write the names of all the members which are accessible from objects belonging to class Design.
(iii) Write the names of all the data members which are accessible from member functions of class costing.
(iv) How many bytes will be required by an object belonging to class Design?

10. Answer the questions(i) to (iv) based on the following :

```
class Regular
{
char SchoolCode[10];
public:
```

```
void InRegular( );
void OutRegular( );
};
class Distance
{
char StudyCentreCode[5];
public:
void InDistance( );
void OutDistance( );
};
class Course : public Regular, private Distance
char Code[5];
float Fees;
int Duration;
public:
void InCourse( );
void OutCourse( );
};
```

(i) Which type of Inheritance is shown in the above example?
(ii) Write names of all the member functions accessible from Outcourse function of class Course.
(iii) Write name of all the members accessible through an object of the Class Course.
(iv) Is the function InRegular( ) accessible inside the function InDistance ( )? Justify your answer.

11. Define a class named ADMISSION in C++ with the following descriptions: Private members:
    AD_NO integer (Ranges 10 - 2000)
    NAME Array of characters (String)
    CLASS Character
    FEES Float
    Public Members:
    - Function Read_Data ( ) to read an object of ADMISSION type
    - Function Display( ) to display the details of an object
    - Function Draw_Nos ( ) to choose 2 students randomly and display the details.

    Use random function to generate admission nos to match with AD_NO.
12. Define a class named MOVIE in C++ with the following description:
    Private members
    HALL_NO integer
    MOVIE_NAME Array of characters (String)
    WEEK integer (Total number of weeks the same movie is shown)
    WEEK_COLLECTION Float
    TOTAL_COLLECTION Float
    Public Members
    - Function Read_Data( ) to read an object of ADMISSION type
    - Function Display( ) to display the details of an object
    - Function Update( ) to update the total collection and Weekly collection once in week changes. Total collection will be incremented by Weekly collection and Weekly collection is made Zero
13. Consider the following declarations and answer the questions given below:

```
class Mydata
{
protected:
Int data;
public:
void Get_mydata(int);
void Manip_mydata(int);
```

```
void Show_mydata(int);
Mydata( );
~Mydata( );
};
class Personal_data
{
protected:
int data1;
public:
void Get_personaldata(int);
void Show_personaldata(int);
Personal_data1( );
~Personal_data1( );
};
class Person: public Mydata, Personal_data
{
public:
void Show_person(void);
Person( );
~Person( );
};
```

i) How many bytes will be required by an object belonging to class Person?
ii) Which type of inheritance is depicted in the above example?
iii) List the data members that can be accessed by the member function Show_person( ).
iv) What is the order of constructor execution at the time of creating an object of class Person?

14. Answer the questions (i) to (iv) based on the following:

```
class Book
{
int year_publication;
char title[25];
float price;
public:
Book( );
void input_data( );
void output_data( );
};
class Tape
{
char comp_name[20];
protected:
char comp_addr[35];
public:
Tape( );
void read_data( );
void show_data( );
};
class Publication : private Book , public Tape
{
int no_copies;
public:
Publication( );
void Pub_Entry( );
void Pub_Detail( );
```

};

(i) Write the names of data members which are accessible from objects belonging to class Publication.
(ii) Write the names of all the member functions which are accessible from objects belonging to class Tape.
(iii) Write in which order the constructors will be invoked when an object of class Publication is created.
(iv) How many bytes will be required by an object belonging to class Publication? **15**. Answer the questions (i) to (iv) based on the following code:

```
class vehicle
{
int wheels;
protected:
int passenger;
public:
void inputdata( );
void outputdata( );
};
class heavyvehicle : protected vehicle
{
int diesel_petrol;
protected:
int load;
public:
void readdata(int, int);
void writedata( );
};
class bus : private heavyvehicle
{
char make[20];
public:
void fetchdata( );
void displaydata( );
};
```

i) Name the base class and derived class of heavyvehicle class.
ii) Name the data member(s) that can be accessed from the function displaydata().
iii) How many bytes will be required by an object of vehicle and heavyvehicle classes respectively?
Iv) Is the member function outputdata( ) accessible to the objects of the class heavyvehicle?

16.. Consider the following declarations and answer the questions given below:

```
class Animal
{
int leg;
protected:
int tail;
public:
void INPUT (int );
void OUT ( );
};
class wild : private Animal
{
int carniv;
protected:
Int teeth;
Public:
void INDATA (int, int )
void OUTDATA( );
```

```
};
class pet : public Animal
{
int herbiv;
public:
void Display (void);
};
```

(i) Name the base class and derived class of the class wild.
(ii) Name the data member(s) that can be accessed from function Display ( ).
(iii) Name the member function(s), which can be accessed from the objects of class pet.
(iv) Is the member function OUT ( ) accessible by the objects of the class wild?

17. Answer the questions (i) to (iv) based on the following class declaration:

```
class Medicine
{
char category[10];
char Date_of_Manufacture[10];
char Date_Of_Expiry[10];
protected:
char company[20];
public:
int x,y;
Medicine( );
void Enter( );
void Show( );
};
class Tablet :protected Medicine
{
protected:
char tablet_name[30];
char volume_label[20];
void disprin( );
public:
float price;
Tablet( );
void enterdet( );
void showdet( );
};
class PainReliever : public Tablet
{
int Dosage_units;
long int tab;
char effects[20];
protected:
int use_within_Days;
public :
PainReliever( );
void enterpr( );
showpr( );
};
```

(i) How many bytes will be required by an object of class Drug and an object of class PainReliever respectively.
(ii) Write names of all the data members which are accessible from the object of class PainReliever.
(iii) Write names of all member functions which are accessible from objects of class PianReliever.

(iv) Write the names of all the data members which are accessible from the functions enterpr().

18. Answer the questions (i) to (iv) based on following code:

```
class World
{
int H;
protected
int s;
public:
void INPUT(int);
void OUTPUT( );
};
class Country : private World
{
int T;
protected:
int U;
public :
void INDATA(int, int);
void OUTDATA();  };
class State : public Country
{
int M;
public :
void DISPLAY(void); };
```

(i) Name the base class and derived class of the class Country.
(ii) Name the data member that can be accessed from function DISPLAY( )
(iii) Name the member functions, which can be accessed from the objects of class State.
(iv) Is the member function OUTPUT() accessible by the objects of the class Country ?

3 Marks Questions : Programming in C++

1 What will be the output of the program(Assume all necessary header files are included) :

```
#include<iostream.h>
void print (char * p )
{
p = "pass";
cout<<"value is "<<p<<endl;
}
void main( )
{
char * x = "Best of luck";
print(x);
cout<<"new value is "<<x<<endl;
}
```

2. What will be the output of the following program

```
#include<iostream.h>
#include<ctype.h>
#include<conio.h>
#include<string.h>
void changestring(char text[], int &counter)
{
char *ptr = text;
int length=strlen(text);
for(;counter<length-2;counter+=2, ptr++)
{
*(ptr+counter) = tolower(*(ptr+counter));
}
}
void main()
{
clrscr();
int position = 0;
char message[]= "POINTERS FUN";
changestring(message, position);
cout<<message<< "@" <<position;
}
```

3. Find the output of the following program :

```
#include<iostream.h>
void main()
{
int Numbers[] = {2,4,8,10};
int *ptr = Numbers;
for (int C = 0; C<3; C++)
{
cout<< *ptr << "@";
ptr++;
}
cout<<endl;
for(C = 0; C<4; C++)
{
(*ptr)*=2;
--ptr;
```

```
}
for(C = 0; C<4; C++)
cout<< Numbers [C]<< "#";
cout<<endl;
}
```

4. Write the output of the following program:

```
#include<iostream.h>
#include<conio.h>
int a =3;
void demo(int &x, int y, int *z)
{
a+= x;
y*=a;
*z = a+y;
cout<< a << ""<< x << ""<<y << ""<<z <<endl;
}
void main( )
{
clrscr( );
int a = 2, b =5;
demo(::a,a, &b);
cout<< ::a<< ""<<a<< ""<< b<<endl;
}
```

5. Find the ouptput of the following :

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
#include<string.h>
#include<ctype.h>
void main( )
{
char *Name= "IntRAneT";
for(int x =0; x<strlen(Name); x++)
{
if(islower(Name[x]) )
Name[x]=toupper(Name[x] );
else
if(isupper(Name[x]) )
if (x%2 = =0)
Name[x]=tolower(Name[x]);
else
Name[x]=Name[x-1];
}
puts(Name);
}
```

6. Give the output of the following program:

```
void main()
{
int x [] = { 10, 20, 30, 40, 50};
int *p, **q, *t;
p = x;
t = x + 1;
q = &t;
cout << *p << "\t" << **q << "\t" << *t++;
```

```
}
```

7. What is the output of the following program if all the necessary header files have been included:

```
char *Name= "a ProFile";
for(int x =0; x<strlen(Name); x++)
{
if(islower(Name[x]) )
Name[x]=toupper(Name[x] );
else
if(isupper(Name[x]) )
if (x%2!=0)
Name[x]=tolower(Name[x-1]);
else
Name[x]--;
}
cout<<Name<<endl;
```

8. Find the output of the following program:

```
#include<iostream.h>
void main( )
{
int U=10,V=20;
for(int I=1;I<=2;I++)
{
cout<<"[1]"<<U++<<"&"<<V – 5 <<endl;
cout<<"[2]"<<++V<<"&"<<U + 2 <<endl;
}
}
```

9.

```
#include<stdlib.h>
#include<iostream.h>
void main( )
{
randomize( );
char City[ ][10]={"DEL","CHN","KOL","BOM","BNG"};
int Fly;
for(int I=0; I<3;I++)
{
Fly=random(2) + 1;
cout<<City[Fly]<<":";
}
}
```

Outputs:

(i) DEL : CHN : KOL:

(ii) CHN: KOL : CHN:

(iii) KOL : BOM : BNG:

(iv) KOL : CHN : KOL:

10. Find the output of the following program.

```
#include<iostream.h>
void Withdef(int HisNum=30)
{
for(int I=20;I<=HisNum;I+=5)
cout<<I<<",";
cout<<endl;
}
void Control(int &MyNum)
{
```

```
MyNum+=10;
Withdef(MyNum);
}
void main()
{
int YourNum=20;
Control(YourNum);
Withdef();
cout<<"Number="<<YourNum<<endl;
}
```

11. Find the output of the following program:

```
#include<iostream.h>
void main( )
{
long NUM=1234543;
int F=0,S=0;
do
{
int R=NUM % 10;
if (R %2 != 0)
F += R;
else
S += R;
NUM / = 10;
} while (NUM>0);
cout<<F-S;
}
```

12. Observe the following program GAME.CPP carefully, if the value of Num entered by the user is 14, choose the correct possible output(s) from the options from (i) to (iv), and justify your option.

```
//Program:GAME.CPP
#include<stdlib.h>
#include<iostream.h>
void main( )
{
randomize( );
int Num,Rndnum;
cin>>Num;
Rndnum=random(Num)+7;
for(int N=1;N<=Rndnum;N++)
cout<<N<<" ";
}
```

Output Options:

(i) 1 2 3
(ii) 1 2 3 4 5 6 7 8 9 10 11
(iii) 1 2 3 4 5
(iv) 1 2 3 4

13. Give the output of the following program:

```
#include<iostream.h>
#include<conio.h>
int g=20;
void func(int &x,int y)
{
x=x-y;
y=x*10;
cout<<x<<','<<y<<'\n';
}
```

```
void main( )
{
int g=7;
func(g,::g);
cout<<g<<','<<::g<<'\n';
func(::g,g);
cout<<g<<','<<::g<<'\n';
}
```

14. Find the output of the following program:

```
#include<iostream.h>
struct Box {
int Len, Bre, Hei;
};
void Dimension(Box B)
{
cout << B.Len << " X " << B.Bre << " X ";
cout << B.Hei << endl;
}
void main ( )
{
Box B1 = {10, 20, 8}, B2, B3;
++B1.Hei;
Dimension (B1); //first calling
B3= B1;
++B3.Len;
B3.Bre++;
Dimension (B3); // second function calling
B2= B3;
B2.Hei += 5;
B2.Len - = 2;
Dimension (B2); // third function calling
}
```

15. Find the output of the following program:

```
#include <iostream.h>
struct PLAY
{ int Score, Bonus;
};
void Calculate(PLAY &P, int N=10)
{
P.Score++;P.Bonus+=N; }
void main()
{
PLAY PL={10,15};
Calculate(PL,5);
cout<<PL.Score<<":"<<PL.Bonus<<endl;
Calculate(PL);
cout<<PL.Score<<":"<<PL.Bonus<<endl;
Calculate(PL,15);
cout<<PL.Score<<":"<<PL.Bonus<<endl;
}
```

16. In the following C++ program , what will the maximum and minimum value of generated with the help of random function.

```
#include<iostream.h>
#include<stdlib.h>
```

```
void main()
{
int r;
randomize();
r=random(20)+random(2);
cout<<r;
}
```

17. Study the following program and select the possible output from it:

```
#include<iostream.h>
#include<stdlib.h>
const int Max=3;
void main( )
{
randomize();
int Number;
Number=50+random(Max);
for(int P=Number; P >=50;P- -)
cout<<P<<"#";
cout<<endl;
}
```

(i) 53#52#51#50#
(ii) 50#51#52#
(iii) 50#51#
(iv) 51#50#

18. Find the output of the following program:

```
#include<iostream.h>
void main()
{
int A[]={10,20,30,40,50};
int *p=A;
while(*p<30)
{
31
if(*p%3!=0)
*p = *p+2;
else
*p=*p+1;
*p++;
}
for(int J=0;J<=4;J++)
{
cout<<A[J]<< "@";
if(J%3 == 0)
cout<<endl;
}
cout<<A[4]*3<<endl;
}
```

19. Find the output of the following program:

```
#include <iostream.h>
void Changethecontent(int Arr[ ], int Count)
{
for (int C=1;C<Count;C++)
Arr[C-1]+=Arr[C];
}
```

```
void main( )
{
int A[ ]={3,4,5},B[ ]={10,20,30,40},C[ ]={900,1200};
Changethecontent(A,3);
Changethecontent(B,4);
Changethecontent(C,2);
for (int L=0;L<3;L++) cout<<A[L]<<'#';
cout<<endl;
for (L=0;L<4;L++) cout<<B[L] <<'#';
cout<<endl;
for (L=0;L<2;L++) cout<<C[L] <<'#'; }
```

20. In the following program, if the value of Guess entered by the user is 65, what will be the expected output(s) from the following options (i), (ii), (iii) and (iv)?

```
#include <iostream.h>
#include <stdlib.h>
void main()
{
int Guess;
randomize();
cin>>Guess;
for (int I=1;I<=4;I++)
{
New=Guess+random(I);
cout<<(char)New;
} }
```

(i) ABBC
(ii) ACBA
(iii) BCDA
(iv) CABD

21.
```
#include <iostream.h>
void Secret(char Str[ ])
{
for (int L=0;Str[L]!='\0';L++);
for (int C=0;C<L/2;C++)
if (Str[C]=='A' || Str[C]=='E')
Str[C]='#';
else
{
char Temp=Str[C];
Str[C]=Str[L-C-1];
Str[L-C-1]=Temp;
}
}
void main()
{
char Message[ ]="ArabSagar";
Secret(Message);
cout<<Message<<endl;
}
```

22. Find the output of the following code.

```
#include<iostream.h>
#include<conio.h>
void main( )
{
```

```
clrscr( );
int a =32;
int *ptr = &a;
char ch = 'D';
char *cho=&ch;
*cho+=a;
*ptr += ch;
*ptr *= 3;
ch=ch-30;
cout<< a << "" <<--ch<<endl;
}
```

23. Give the output of the following program

```
#include<iostream.h>
void main( )
{
char *p="Difficult";
char c;
c=*p++;
cout<<c<<c++<<++c<<"\n";
char d =c+1;
cout<<d++<<"\n";
cout<<d<<"\n";
cout<<*p;
}
```

24. Given a binary file PHONE.DAT, containing records of the following structure type

```
class Phonlist
{
char Name[20];
char Address[30];
char AreaCode[5];
char PhoneNo[15];
public:
void Register();
void Show();
int CheckCode(char AC[ ])
{
return strcmp(AreaCode,AC);
}
};
```

Write a function TRANSFER ( ) in C++, that would copy all those records which are having AreaCode as "DEL" from PHONE.DAT to PHONBACK.DAT.

25. Given a binary file TELEPHON.DAT, containing records of the following class Directory:

```
class Directory
{
char Name[20];
char Address[30];
char AreaCode[5];
char Phone_No[15];
public:
void Register();
void Show();
int CheckCode(char AC[])
{
return strcmp(AreaCode,AC[]);
```

```
}
};
```
Write a function COPYABC in C++ that would copy only those records having AreaCode as "123" from TELEPHON.DAT to TELEBACK.DAT.

26. Given a binary file SPORTS.DAT, containing records of the following structure type :

```
struct Sports
{
char Event[20];
char Participant[10][30];
};
```
Write a function in C++ that would read contents from the file SPORTS.DAT and creates a file named ATHLETIC.DAT copying only those records from SPORTS.DAT where the event name is "Athletics".

27. Write a function in C++ to search for a BookNo from a binary file "BOOK.DAT", assuming the binary file is containing the objects of the following class.

```
class BOOK
{
int Bno;
char Title[20];
public:
int RBno(){return Bno;}
void Enter(){cin>>Bno;gets(Title);}
void Display(){cout<<Bno<<Title<<endl;}
};
```
28. Write a function in C++ to add new objects at the bottom of a binary file "STUDENT.DAT", assuming the binary file is containing the objects of the following class.

```
class STUD
{
int Rno;
char Name[20];
public:
void Enter()
{
cin>>Rno;gets(Name);
}
void Display(){cout<<Rno<<Name<<endl;}
};
```
29. Write a function in C++ to read and display the detail of all the members whose membership type is 'L' or 'M' from a binary file "CLUB.DAT". Assuming the binary file "CLUB.DAT" is containing objects of class CLUB, which is defined as follows:

```
class CLUB
{
Int Mno.
char Mname[20];
char Type; //Member Type: L Life Member M Monthly member G Guest
public:
void Register( );
void Display( );
char whatType( ) { return type; }
};
```
30. Assuming the class DRINKS defined below, write functions in C++ to perform the following :

(i) write the objects of DRINKS to binary file.

(ii) Read the objects of DRINKS from binary file and display them on screen when Dname has value "Pepsi".

```
class DRINKS
{
int DCode;
char DName[13];
Int Dsize; // size in litres.
float Dprice;    }
public:
void getdrinks( )
{ cin>>DCode>>DName>>Dsize>>Dprice;}
void showdrinks( )
{ cout<< DCode<<DName<,Dsize<,Dprice;}
char *getname()
{ return Dname;}
};
```