WORKSHEET

[Only for candidates, who opted for C++]

1. (a) Out of the following, find those identifiers, which cannot be used for naming Variables, Constants or Functions in a C++ program : 2

Total*Tax, double, Case, My Name,
NeW, switch, Column31, _Amount

(b) Ronica Jose has started learning C++ and has typed the following program. When she compiled the following code written by her, she discovered that she needs to include some header files to successfully compile and execute it. Write the names of those header files, which are required to be included in the code. 1

```
void main()
{   double X,Times,Result;
    cin>>X>>Times;
    Result=pow(X,Times);
    cout<<Result<<end1;
}
```

(c) Rewrite the following C++ code after removing any/all syntactical errors with each correction underlined. 2

Note : Assume all required header files are already being included in the program.

```
#define Formula(a,b) = 2*a+b
void main()
{   float X=3.2;Y=4.1;
    Z=Formula(X,Y);
    cout<<'Result='<<Z<<end1;
}
```

(d) Find and write the output of the following C++ program code : 2

Note: Assume all required header files are already included in the program.

```
typedef  char  TEXT[80];
void  JumbleUp(TEXT  T)
{      int   L=strlen(T);
    for  (int  C=0;C<L-1;C+=2)
    {        char CT=T[C];
        T[C]=T[C+1];
        T[C+1]=CT;
    }
    for  (C=1;C<L;C+=2)
      if  (T[C]>='M'  &&  T[C]<='U')
        T[C]='@';
}

void  main()
{   TEXT    Str="HARMONIOUS";
    JumbleUp(Str);
    cout<<Str<<end1;
}
```

(e) Find and write the output of the following C++ program code : 3

Note : Assume all required header files are already being included in the program.

```
class  Share
{   long    int  Code;
    float  Rate;
    int  DD;
public:
    Share(){Code=1000;Rate=100;DD=1;}
    void GetCode(long int C, float R) {
        Code=C;
        Rate=R;
    }
    void  Update(int  Change,int  D)
    {   Rate+=Change;
        DD=D;   }
```

```
    void Status()
    {   cout<<"Date:"<<DD<<end1;
        cout<<Code<<"#"<<Rate<<end1;
    }
};
void main()
{   Share   S,T,U;
    S.GetCode(1324,350);
    T.GetCode(1435,250);
    S.Update(50,28);
    U.Update(-25,26);
    S.Status();
    T.Status();
    U.Status();
}
```

(f) Look at the following C++ code and find the possible output(s) from the options (i) to (iv) following it. Also, write the maximum and the minimum values that can be assigned to the variable PICKER. **2**

Note : Assume all the required header files are already being included in the code.

The function random(n) generates an integer between 0 and n-1.

```
void main()
{   randomize();
    int PICKER;
    PICKER=1+random(3);
    char COLOR[][5]={"BLUE","PINK","GREEN","RED"};
    for(int I=0;I<=PICKER; I++) {
        for(int J=0; J<=I;J++)
            cout<<COLOR[J];
        cout<<end1;
    }}
```

(i)	(ii)	(iii)	(iv)
PINK	**BLUE**	**GREEN**	**BLUE**
PINKGREEN	**BLUEPINK**	**GREENRED**	**BLUEPINK**
PINKGREENRED	**BLUEPINKGREEN** **BLUEPINKGREENRED**		**BLUEPINKGREEN**

2. (a) Write any four important characteristics of Object Oriented Programming ? Give example of any one of the characteristics using C++. **2**

(b) Observe the following C++ code and answer the questions (i) and (ii). Assume all necessary files are included :

```
class  BOOK
{   long    Code;
    char  Title[20];
    float  Price;
public:
   BOOK()    //Member  Function  1
    {   cout<<"Bought"<<end1;
        Code=10;strcpy(Title,"NoTitle");Price=100;
    }
    BOOK(int  C,char  T[],float  P)  //Member  Function  2
    {   Code=C;
        strcpy(Title,T);
        Price=P;
    }
    void  Update(float  p)          //Member  Function  3
    {
        Price+=P;
    }
    void  Display()                 //Member  Function  4
    {   cout<<Code<<":"<<Title<<":"<<Price<end1;
    }
    ~BOOK()                         //Member  Function  5
    {  cout<<"Book    Discarded!"<<end1;
    }

};
void  main()                              //Line  1
{                                         //Line  2
    BOOK  B,C(101,"Truth",350};           //Line  3
    for  (int  I=0;I<4;I++)               //Line  4
    {                                     //Line  5
        B.Update(50);C.Update(20);        //Line  6
        B.Display();C.Display();          //Line  7
    }                                     //Line  8
```

```
}                                                    //Line 9
```

(i) Which specific concept of object oriented programming out of the following is illustrated by Member Function 1 and Member Function 2 combined together ?

- Data Encapsulation
- Polymorphism
- Inheritance
- Data Hiding

(ii) How many times the message **"Book Discarded!"** will be displayed after executing the above C++ code ? Out of line 1 to Line 9, which line is responsible to display the message **"Book Discarded!"**

(c) Write the definition of a class CITY in C++ with following description :

```
Private Members

- Ccode      //Data member for City Code (an integer)
- CName      //Data member for City Name (a string)
- Pop        //Data member for Population (a long int)
- KM         //Data member for Area Coverage (a float)
  Density    //Data member for Population Density (a float)
- DenCal()   //A member function to calculate ---
             //Density as Pop/KM

Public Members

- Record() //A function to allow user to enter values of
           //Acode,Name,Pop,KM and call DenCal()
           //function
- View() //A function to display all the data members
         //also display a message "Highly Populated
         //City"
         //if the Density is more than 10000
```

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

```
class ITEM{
    int  Id;
    char  IName[20];

protected:
    float Qty;
public:
    ITEM();
    void Enter();void  View();
};

class TRADER
{
    int DCode;

protected:
    char Manager[20];

public:
    TRADER();
    void Enter();
    void View();
};

class SALEPOINT : public ITEM,private TRADER
{
    char Name[20],Location[20];
public:
SALEPOINT();
void EnterAll();
void ViewAll();

};
```

(i) Which type of Inheritance out of the following is illustrated in the above example ?

- Single Level Inheritance
- Multi Level Inheritance
- Multiple Inheritance

(ii) Write the names of all the data members, which are directly accessible from the member functions of class SALEPOINT.

(iii) Write the names of all the member functions, which are directly accessible by an object of class SALEPOINT.

(iv) What will be the order of execution of the constructors, when an object of class SALEPOINT is declared ?

3. (a) Write function definition of DISP3CHAR( ) in C++ to read the content of a text file KIDINME.TXT, and display all those words, which has three characters in it. **2**

Example :

If the content of the file KIDINME.TXT is as follows :

When I was a small child, I used to play in the garden with my grand mom. Those days were amazingly funful and I remember all the moments of that time.

The function DISP3CHAR( ) should display the following :

was the mom and all the

(b) Write a definition for function ONOFFER( ) in C++ to read each object of a binary file TOYS.DAT, find and display details of those toys, which has status as "ON OFFER". Assume that the file TOYS.DAT is created with the help of objects of class TOYS, which is defined below : **3**

```
class  TOYS
{   int TID;char Toy[20],Status[20]; float MRP;
public:
    void  Getinstock()
    {   cin>>TID;gets(Toy);gets(Status);cin>>MRP;
    }
    void  View()
    {  cout<<TID<<":"<<Toy<<":"<<MRP<<"":"<<Status<<end1;
    }
    char  *SeeOffer(){return  Status;}.
};
```

(c) Find the output of the following C++ code considering that the binary file CLIENT. DAT exists on the hard disk with a data of 1000 clients. **1**

```
class  CLIENT
{
    int  Ccode;char  CName[20];

public:

    void  Register();void  Display();

};

void  main()

{

    fstream  CFile;

    CFile.open("CLIENT.DAT",ios::binary/ios::in);

    CLIENT  C;

  CFile.read((char*)&C, sizeof(C));
  cout<<"Rec:"<<CFile.tellg()/sizeof(C)<<end1;
  CFile.read((char*)&C, sizeof(C));
  CFile.read((char*)&C, sizeof(C));

    cout<<"Rec:"<<CFile.tellg()/sizeof(C)<<end1;

    CFile.close();

}
```