HOLIDAYS' HOMEWORK 2017-18

CLASS : XII

Subject : Computer Science

Note : Attempt the following questions in a separate register and make yourself prepared to conquer the world.

Chapter- 1 : C++ Revision Tour

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

(Outside Delhi 2016)

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

b. Observe the following programs very carefully and write the names of those header file(s), which are essentially needed to compile and execute the following program successfully :

(Delhi 2015)

```
typedef char TEXT[80];
void main( )
{
        TEXT Str[ ] = "Peace is supreme";
        int Index = 0;
        while (Str[Index]) !='\0')
                if ( isupper(Str[Index]))
                        Str[Index++] ='#';
                else
                        Str[Index++} = '*';
                puts(Str);
}
```

c. Rewrite the following C++ code after removing all the syntax error(s), if present in the code. Make sure that you underline each correction done by you in the code. ***(Delhi 2014)***

Important Note.

- Assume that all the required header files are already included, which are essential to run this code.
- The corrections made by you do not change the logic of the program.

```
typedef char[50] STRING;
void main( )
{
        City STRING ;
        gets(City);
        cout<<City[0]<<'\t'<<City[2];
        cout<<City<<endline;
}
```

d. Rewrite the following program after removing the syntactical errors. Underline each correction. **(Outside Delhi 2017)**

```
Void main( )
{
        cout<<"Enter an alphabet :";
        cin>>Ch;
        Switch(Ch)
        {
                case 'A' cout<<"Apple"; Break;
                case  'B' cout<<"Bat"; Break;
}
```


Chapter- 2 : Object Oriented Programming

a. Write any four important characteristics of Object Oriented Programming? Give example of any one of the characteristics using C++. ***(Outside Delhi 2016)***

b. Differentiate between data encapsulation and data abstraction with reference to OOP. ***(Outside Delhi 2010)***

Chapter - 3 : Function Overloading

a. What do you mean by Polymorphism ? Give a suitable example of the same. ***(Delhi 2012)***

b. What is function overloading? Write an example using C++ to illustrate the concept of function overloading.

(Outside Delhi 2014)

c. Write the output of the following C++ code. Also, write the name of the feature of OOP used in the following program jointly illustrated by the functions [I] to [IV] :

(Outside Delhi 2011)

```
#include<iostream.h>
void Line( )
{       for (int L=1 ; L<=80 ; L++) cout << "-";
        cout<<endl;
}
void Line(int N)
{       for (int L=1 ; L<=N ; L++) cout<<"*";
        cout<<endl;
}
void Line (char C, int N)
{       for ( int L=1 ; L<=N ; L++) cout<<C;
        cout<<endl;
}
void Line(int M, int N)
{       for (int L=1 ; L<=N ; L++) cout<<M*L ;
        cout<<endl;
}
void main ( )
{
        int A=9, B=4, C=3;
        char K = '#';
```

```
        Line(K,B);

        Line(A,C);

}
```

Chapter - 4 : Classes and Objects

a. Differentiate between public and private visibility modes in context of Object Oriented Programming using a suitable example illustrating each. ***(Delhi 2008)***

b. Rewrite the following program after removing the syntactical errors. Underline each correction. ***(Delhi 2010)***

c. Write the definition of class CITY in C++ with the following description : ***(Outside Delhi 2016)***

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

Chapter - 5 : Constructors and Destructors

a) Differentiate between Constructor and Destructor function with respect to Object Oriented Programming. ***(Outside Delhi 2011)***

b) Answer the questions (i) and (ii) after going through the following program : **(Delhi 2008)**

```
#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 the 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 corrections are made in the program.)

(c) Observe the following C++ code and answer the questions (i) and

(ii). Note : Assume all necessary files are included. (OD 2017)

```
class Test
{
        long TCode;
        char TTitle[20];
        float Score;
        public :
                Test( )                 //Member Function 1
                {
                    TCode = 100;
                    strcpy (TTitle, "First Test");
                }
                Test (Test &T)          //Member Function 2
                {
                    TCode=T.TCode+1;
                    Strcpy(TTitle,T.Title);
                    Score = T.Score;
                }
};
void main ( )
{
    _____                   //Statement 1
    _____                   // Statement 2
}
```

(i) Which OOP feature is illustrated by the Member Function 1 and the Member Function 2 together in the class Test?

(ii) Write Statement 1 and Statement 2 to execute Member Function 1 and Member Function 2 respectively.

Chapter - 6 : Inheritance

a) Differentiate between ***Multiple Inheritance*** and ***Hirarchical Inheritance*** . Also, give suitable example to illustrate each.

(Outside Delhi 2009)

b) Answer the questions (i) to (iv) based on the following : ***(Delhi 2007)***

```
class Interior
{           int OrderId;
            char Address[20];
      protected:
            float Advance ;
      public :
            interior ( );
            void Book( );
            void View( );
};
class Painting : public Interior
{
            int wallArea, ColorCode;
      protected :
            char Type;
      public :
            painting( );
            void PBook( );
            void PView( );
};
```

```
class Billing : public Painting
{
        float Charges ;
        void Calculate( );
public :
        Billing( );
        void Bill( );
        void BillPrint( );
};
```

(i) What type of Inheritance is illustrated in the above example?

(ii) Write the names of all the member functions, which are directly accessible from an object of class Billing.

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

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

Chapter - 7 : Arrays

a) Write a function in C++, which accepts an integer array and its size as parameters and rearranges the array in reverse.

Example : If an array of nine elements initially contains the elements as
4, 2, 5, 1, 6, 7, 8, 12, 10
Then the function should rearrange the array as
10, 12, 8, 7, 6, 1, 5, 2, 4

b) An array Arr[40][10] is stored in the memory along the column with each element occupying 4 bytes. Find out the address of the location. Arr[3][6] if the location Arr[30[10] is stored at the address 9000.

c) A[15][20] is a two-dimensional array, which is stored in the memory along the row with each of its elements occupying 4 bytes. Find the address of the element A[5][15], if the element A[10][5] is stored at the memory location 35000.

(OD 2017)

c) WAP in C++ perform ***selection sort*** on a 2-d array.