SAMPLE PAPER – 2014-2015 (HALF YEAR)

CLASS XII – COMPUTER SCIENCE

TIME : 3 HRS **MM : 70**

General Instructions

1. **All questions are compulsory.**
2. **Programming language : C++**

A. Answer the following questions. **[1 x 8 = 8]**

A.1. Name the header files, to which the following built-in functions belong.

(i) strcpy( ) (ii)random( ) (iii) islower( ) (iv) gets( )

A.2. What is the difference between Class and Object?

A.3. Rewrite the following program after removing the syntactical error(s) if any. Underline each correction.

```
#include [iostream.h]
void main( )
{
  First=10, Second = 20;
  Jumpto(First ; Second),
  Jumpto(second);
}
void Jumpto( Int n1, int n2=50)
{
  n1= n1 + n2;
  count << n1 >> n2;
}
```

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

```
#include<iostream.h>
void main( )
{
        Struct movie {
                char moviename[20];
                char movietype;
                int tic_cost=100;
        } MOVIE;
        cout << "enter movie name & movie type\n ";
        gets(moviename);
        gets(movietype);
}
```

A.5. What will be the output of following code fragment, consider all essential header files are included.

```
void main()
{
char ch='E';
  int value=ch;
  while (--value > 65)
  {
       ch=value--;
       cout<<++ch<<"=>";
      }
}
```

A.6. What do you mean by Function Prototype?

A.7. Differentiate between Implicit and Explicit type conversion?

A.8 What is the difference between call by value and call by reference?

B. Answer the following questions. [2 x 12 = 24]

B.1. What is the difference between #include and #define? Give an example in C++ to illustrate both.

B.2. Find the output of the following program:

```
#include<iostream.h>
#include<ctype.h>
void main()
{
        char  mystring[ ] = "What@OUtPUT!";
        for(int I = 0; mystring[I]!='\0'; I++)
        {
                If(!isalpha(mystring[I]))
                        mystring[I] = '$';
                else if (isupper(mystring[I]))
                        mystring[I]= mystring[I]+1;
                else
                        mystring[I] = mystring[I+1];
        }
        cout << mystring;
}
```

B.3. Give the output of the following program:

```
#include<iostream.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';
}
```

B.4. Observe the following program and find out, which output(s) out of (i) to (iv) will not be expected from the program? What will be the minimum and the maximum value assigned to the variable Chance?

```
#include<iostream.h>
#include<stdlib.h>
void main( )
{
    randomize( );
    int  Arr[ ]={9,6},N;
    int Chance=random(2)+10;
    for(int I=0; I<2;I++)
      {
        N=random(2);
        cout<<Arr[N]+Chance<<"*";
      }
}
```

Possible Output

i. 9*6* ii. 19*17*

iii. 19*16* iv. 20*16*

B.5. Find the output of the following program:

```
#include<iostream.h>
void Change (int C[ ], int N, int devide)
{
    for (int i = 0 ; i < N ;  i++)
        if (i < devide )
            C[i] + = i;
        else
            C[i] * = i;
}
void ShowData (int C[ ], int N )
{
    for( int i = 0 ; i < N ; i++)
        (i % 2 == 0) ? cout<< C[i] <<"%" : cout << C[i]<<
            endl;
```

```
}
void main( )
{
    int K[ ] = {30, 40, 50, 20, 10, 5};
    Change(K, 6, 3);
    ShowData ( K, 6);
}
```

B.6. What are actual and formal parameters of a function? Give an example in C++ to illustrate both.

B.7. What is default arguments? Give an example in C++.

B.8. What is the Data Abstraction and Inheritance? Explain with the help of suitable example?

B.9. Write the one advantage and one disadvantage of OOPs.

B.10. What will be the output of following segments:

```
void Withdef(int HisNum=29)
{       if(HisNum!=29)
            for(int I=12;I<=HisNum;I+=7)
                    cout<<I<<" ";
         cout<<"$";
}
  void Control(int &MyNum)
  {             MyNum+=8;
                Withdef(MyNum);
   }
void main( )
{             int YourNum=16;
     Control(YourNum);
     Withdef( );
      cout<<YourNum;
}
```

B.11. A function printchar() is defined as void printchar(char ch='*', int len=40)

```
{
for(int x=0; x < len; x++) cout << ch;
cout << endl;
}
```

How will you invoke function printchar (write only calling statement) for :

(i) print '*' 40 times,

(ii) print '*' 20 times,

(iii) to print '=' 40 times,

(iv) to print '=' 30 times.

B.12. Write a function max( ), which receive an integer array and its size as argument , and return the maximum element of array.

C.1. Write a C++ Program that uses an area( ) function for the calculation of area of a triangle or a rectangle or a square. Number of sides (3 for triangle, 2 for rectangle, and 1 for square) suggest about the shape for which area is to be calculated. (2)

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

```
#include <iostream.h>
#include<fstream.h>
#include<stdlib.h>
class  ITEM
{
        int ino;
        char iname[20];
        float price;
    public:
                void InputItem(){...} // To input details of item.
                void ShowItem(){...} // To display details of item.
int getIno( ) { return ino; }
};
void Modify( ) //To modify ITEM.
{
        fstream File;
        ITEM It;                int cino;
        File.open("ITEM.DAT", ios::binary | ios::in | ios::out);
        cout << "ITEM No to modify : ";
        cin>> cino;
        while(File.read((char*)&It, sizeof(ITEM))
        {
                if(cino == It.getIno( ))
                {
                        cout << "Enter New Details of Item\n";
                        It.InputItem();
                        int FilePos = _____;            //Statement 1
                        _____;                          //Statement 2
File.write((char *)&It, sizeof(ITEM);      //Re-writing record
                }
        }
        File.close( );
}
```

C.3. What is Constructor and Destructor? Can we overload constructor without writing many constructors, if yes, then how? 2

C.4. Answer the questions (i) to (iv) after going through the following class.

```
class player
{
        int health, age;
  public :
        player() { health = 7; age = 17; }              //constructor1
        player( int h, int a) { health=h; age= a; }     // constructor 2
        player(player &p) { ……}                         //constructor 3
        ~player() { cout << "\nMemory free";
};
void main()
{
        player p1(9,26);                                //statement 1
        player p2 = p1;                                 //statement 2
        return 0;
}
```

C.4.1. Answer these question: 2

(i) Write the name of construtor1, constructor2 and constructor3.

(ii) When p2 object is created, specify which constructor gets invoked and why?

C.4.2. Answer these question: 2

(i) Write complete definition of constructor3.

(ii) What output given by the above program.

C.5. What do you mean by inheritance? Why inheritance is introduced in C++ language, write at least two reasons. 2

C.6. Given the following set of definitions: [Assumes all header files are included] 2

```
class X
{
    public:
        X() { cout << "X"; }
        ~X() { cout <<"~X";}
};
class Y : public X
{
    public :
Y() { cout << "Y";}
        ~Y(){ cout << "~Y";}
};
class Z : private Y
{
   public :
```

```
        Z() { cout << "Z"; }
        ~Z() {cout <<"~Z";}
};
void main( )
{
        Z zobj;
        cout << "\n------------------------"<<endl;
}
```

What output given by the above program.

C.7. Write a function in C++ to count the no of "He" or "She" words present in a text file "STORY.TXT". If the file "STORY.TXT" content is as follows- 2

He is playing in the ground. She is
playing with her dolls.

The output of the function should be :

Count of He/She in file : 2

C.8. Write a function to count the number of vowel in a text file named "PARA.TXT". 2

C.9. Write a function in C++ to search for a laptop from a binary file "LAPTOP.DAT" containing the objects of class LAPTOP (as defined below). The user should enter the Model No and the function should search and display the details of the laptop. 3

```
class LAPTOP
{
        long ModelNo ;
        float RAM, HDD ;
        char Details [120] ;
public:
        void StockEnter ( )
        {       cin>>ModelNo>>RAM>>HDD;
                gets (Details);
        }
        void StockDisplay ( )
        {       cout<<ModelNo<<RAM<<HDD<<Details<<endl;
        }
        long ReturnModelNo ( ) {return ModelNo ;}
} ;
```

D.1. Define a class to represent a book in a library. Include the following members: 4

Data Members

Book Number, Book Name, Author, Publisher, Price, No of Copies, No. of copies issued.

Member Function

a) To input details of book

b) To issue a book from library to the member after checking its availability, if available then issue a book by increasing value of "no of copies issue" by 1, otherwise display error message "Not available in library".

c) To get refund a book from library members and decrease value of "no of copies issue" by 1, if it is zero then display error message "not issued this book from library".

d) To display details of book.

D.2. Consider the following C++ declaration and answer the questions given below:

```
class A                                                    4
{
void any( );
protected:
int a, b;
void proc( );
public:
A();
void getA( );
void putA( );
};
class B : protected A
{
        int c,d;
  protected:
        int e, f;
        void getB( );
  public:
        int g;
        B ( );
        void putB( );
};
class C : private B
{
        int p;
    protected:
        int q;
        void getC( );
    public:
        int r;
        void showC( );
};
```

(i) Name all the member functions and data members which are accessible by the object of class C?

(ii) Name the base class and derived class of class B?

(iii) Name all the data members which are accessible from member functions of class C?

(iv) How many bytes will an object belonging to the class C require?

E.1 Write a function in C++, which accepts an integer array and its size as arguments and swap the elements of every even location with its following odd location. 3

example : if an array of nine elements initially contains the elements as

2,4,1,6,5,7,9,23,10

then the function should rearrange the array as

4,2,6,1,7,5,23,9,10

E.2 An array P[40][30] is stored in the memory along the row with each of the element occupying 4 bytes and the very first element has the memory location as 4500, find out the memory location for the element P[10][20]. 3

E.3 Suppose an array P containing float is arranged in ascending order. Write a user defined function in C++ to search for one float from P with the help of binary search method. The function should return an integer 0 to show absence of the number and integer 1 to show presence of the number in the array. the function should have the parameters as (1) an array P (2) the number DATA to be searched (3) number of elements N. 3

E.4 Write a function in C++ to perform Insert operation in a static circular queue containing Book's information. 4

```
struct BOOK {
long Accno;     // Book Accession No
char Title[20]; // Book Title
};
```

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