Roll Number		

SET 2

INDIAN SCHOOL MUSCAT
FIRST TERM EXAMINATION
COMPUTER SCIENCE

CLASS: XII | Sub. Code: 083 | Time Allotted: 3 Hrs

09.05.2018 | Max. Marks: 70

General Instructions:
All questions are compulsory
Programming language used : C++

1. a) Which C++ header file(s) are NOT needed to run/execute the following C++ source code. 1

```
#include <iostream.h>
#include <stdio.h>
#include <string.h>
#include <math.h>
void main()
{
char STR[80];
gets(STR);
puts(strrev(STR));
getch();
}
```

b) Explain Actual and formal parameters with example. 2

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.

```
void main()
{
cout<<"Enter an integer";
cin>>N;
switch(N%2)
case 0 cout<<"Even"; Break;
case 1 cout<<"Odd" ; Break;
}
```

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.

```
#define Big(A,B) (A>B)?A+1:B+2
void main()
{
char W[] = "Exam";
```

```
int L=strlen(W);
for(int i =0; i<L-1; i++)
W[i] = Big(W[i],W[i+1]);
cout<<W<<endl;
}
```

e) Observe the following program carefully and attempt the given questions : 2

```
void main()
{ clrscr();
randomize();
char subject[][10]={"BSC","BCA","BBA","ICWA"};
int ch;
for(int i=1;i<=3;i++)
{
  ch=random(i)+1;
  cout<<courses[ch]<<"\t";
}
getch();
}
```

i. Out of all the four courses stored in the variable subject, which course will never be displayed in the output and which course will always be displayed at first in the output?

ii. Mention the minimum and the maximum value assigned to the variable ch.

f) Write the output of the following C++ program code : 2

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

```
void Position(int &C1,int C2=3)
{ C1+=2; C2+=Y;
}
void main()
{
int P1=20, P2=4;
Position(P1);
cout<<P1<<","<<P2<<endl;
Position(P2,P1);
cout<<P1<<","<<P2<<end1;
}
```

g) 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.

```
void main()
{
int A[]={10,12,15,17,20,30};
for(int i = 0; i<6; i++)
{
if(A[i]%2==0)
A[i] /= 2;
else if(A[i]%3==0)
A[i] /= 3;
if(A[i]%5==0)
A[i] /= 5;
}
for(i = 0; i<6; i++)
cout<<A[i]<<"#";
```

```
}
```

i) Write a Get1From2( ) function in C++ to transfer the content from two arraysFIRST[ ] and SECOND[ ] to array ALL[ ]. The even places (0, 2, 4,...) of arrayALL[] should get the content from the array FIRST[ ] and odd places (1,3,5,...) of the array ALL [ ]should get the content from the array SECOND[ ] . 3

Example:
If the FIRST[ ] array contains
30, 60, 90
And the SECOND[ ] array contains
10, 50, 80
The ALL[ ] array should contain
30, 10, 60, 50, 90, 80

j) Write a function REVCOL (int P[] [5], int N, int M) in C++ to display the content of a two dimensional array with each column content in reverse order. 3

Note : Array may contain any number of rows. For example, if the content of array is as follows :
15 12 56 45 51
13 91 92 87 63
11 23 61 46 81
The function should display output as :
11 23 61 46 81
13 91 92 87 63
15 12 56 45 51

2.a) Explain Data abstraction with an example. 2

b) i) What is polymorphism? How is it implemented in C++? 3
ii) Define abstract class.

3. a) Write the output of the following C++ code. Also, write the name of feature of Object Oriented Programming used in the following program jointly illustrated by the functions [I] to [IV]. 2

```
#include<iostream.h>
void Print ( ) // Function [I]
{
for (int K=1;K<=60; K++) cout<< "-";
cout<<endl;
}
void Print (int N) //Function[II]
{
for (int K=1;K<=N; L++) cout<<"*";
cout<<endl;
}
void Print(int A, int B) //Function[III]
{
for(int K=1;K<=B;K++) cout<<A*k;
cout<<endl;
}
void Print(char T, int N) // Function[IV]
{
for (int K=1;k<=N;K++) cout<<T;
cout<<endl;
```

```
}
void main( )
{
int U=9,V=4,W=3;
char C =‟@‟;
Print(C,V);
Print(U,W);
}
```

b) Write two overloaded functions called Add() . The first function takes two integers and finds the sum of two numbers. The second function takes two strings as argument and combines the two strings into one (For eg. if the first string is “Computer” second string is “book” , the combined string should be “Computerbook”). 3

4. a) Name any two differences between a member function and ordinary function. 2

b) Differentiate between structure and class. 2

c) Observe the following C++ code carefully and obtain the output, which will appear on the screen after execution of it. Assume all required header files are already being included in the program. 3

```
class Aroundus
{
   int Place, Humidity, Temp;
 public:
   Aroundus(int P = 2)
   {
      Place = P;
      Humidity = 60;
      Temp = 20;
   }
   void Hot (int T)
   { Temp += T;
   }
   void Humid(int H)
   { Humidity += H;
   }
   void JustSee()
   {  cout << Place << ":" << Temp << "&" << Humidity << "%" << endl;
   }
};

void main()
{
   Aroundus A, B(5);
   A.Hot(10);
   A.JustSee();
   B.Humid(15);
   B.Hot(2);
   B.JustSee();
   A.Humid(5);
   A.JustSee();
}
```

d) i) How Data encapsulation is implemented in C++? Explain with example. 3
ii) Write the difference between private and protected members of a class.

e) Write the definition of a class PIC in C++ with following description : 4

Private Members

– Pno //Data member for Picture Number (an integer)

– Category //Data member for Picture Category (a string)

– Location //Data member for Exhibition Location (a string)

– FixLocation //A member function to assign Exhibition Location as per category as shown in the following table :

Category	**Location**
Classic	Amina
Modern	Jim Plaq
Antique	Ustad Khan

Public Members

– Enter() //A function to allow user to enter values Pno, category and call FixLocation() function

– SeeAll() //A function to display all the data members

f) Define a class candidate in C++ with following Description: 4

Private Members

- A data member RNo (Registration Number) of type long
- A data member Name of type string
- A data member Score of type float
- A data member Remark of type string
- A member function AssignRem( ) to assign Remarks as per the Score obtained by a candidate. Score range and the respective Remarks are

shown as follows:

Score	**Remarks**
>=50	Selected
less than 50	Not selected

Public members :

- A function ENTER( ) to allow user to enter values for RNo, Name, Score & call function AssignRem() to assign the remarks.
- A function DISPLAY( ) to allow user to view the content of all the data members.

5.a) Why is an object passed by reference in a copy constructor? 2

b) Observe the following C++ code and answer the questions (i) and (ii) : 2

```
class Traveller
 { long PNR;
char TName[20];
public :
 Traveller() //Function 1
{cout<<"Ready"<<<< TName <<endl;
}
void Book(long P,char N[]) //Function 2
{PNR = P; strcpy(TName, N);
}
Traveller(Traveller& T); //Function 3
```

```
void print()   //Function 4
 {cout<<< TName <<endl;
}
~Traveller() //Function 5
{cout<< "Booking Cancelled.."<< end1;
}
};
```

i) When is Function 2 invoked? Write the statement to invoke Function 3.
ii) Write the complete definition of Function 3.

c) Answer the questions (i) and (ii) after going through the following class: 3

```
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?
iii) Write an example illustrating the calls for Function 1 and Function 3.

6. a) Differentiate between Multiple and Multi level inheritance. 2

b) Answer the question (i) to (iv) based on the following: 4

```
class Student
{
int Rno;
char Name[20];
float Marks;
protected:
void result( );
public:
Student ( );
void Register ( ); void Display( );
```

```
};
class Faculty
{
long FCode;
char FName [20];
protected:
float Pay;
public:
Faculty ( );
void Enter( );
void Show( );
};
class Course: public Student, private Faculty
{
long CCode [10]; char CourseName [50];
char StartDate [8], EndDate [8];
public:
Course( );
void Commence ( );
void CDetail ( );
};
```

(i) Which type of inheritance is illustrated in the above C++ code?
(ii) Write the names of all the data members, which is /are accessible from member function Commence of class Course.
(iii) Write the names of member functions, which are accessible from objects of class Course.
(iv) Write the names of all the members, which are accessible from objects of class faculty.

c) Answer Questions 1 to 4 after going through the following code: 4

```
    class drama
 {char dname[20];
                        int Dduration;
                        protected:
                        char dactors[10][20];
                        public:
                        void enterdrama( );
                        void displaydrama( );
        };
 class realityshow { char rname[15];
                    int Rduration;
                    protected:
                    char Rparticipants[15][20];
                    public:
                    void enterreality ( );
                    void dispreality( );
                   };

    class news{                 int Nduration;
                        char nreader[10][15];
                        public:
                        void enternews( );
                        void dispnews( )
        };
```

```
class tvprog : public drama, private realityshow, public news
                    char chnlgrp[20];
                      float pkgcost;
                      public:
                      void enterprog( );
                      void dispprog( );};
```

i) Write the names of all members accessible from dispprog( ) of class tvprog.

ii) Write name of all data members accessible from object of class tvprog.

iii) Calculate size of an object of class tvprog.

iv) Write the order for the call of the constructors when object of class tvprog is declared.

7.a) What is the use of ios::out? 1

b) Name the function of ifstream class. 1

c) Which function is used to disconnect the stream object from the file? 1

d) What are the two ways of opening a data file for reading in C++? 2

End of the Question Paper