ANANDALAYA
PERIODIC TEST – 1
Class : XII

Subject: Computer Science M.M: 40
Date : 20/07/2017 Time: 2 Hour

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

Q-1 (a) Differentiate between the post-increment and pre-increment operators. Also, give (2)
suitable C++ code to illustrate both.

(b) Name the header file, to which following built-in functions belong: (2)
isupper() setw()
exp() strcmp()

(c) Rewrite the following program after removing the syntactical error(s) if any. (2)
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 > = 0 ; Loc - -)
                cout >> Numbers [Loc];
}
```

(d) Rewrite the corrected code for the following program. Underline each correction (3)
(if any)
```
#include <iostream.h>
structure Supergym
{
        int member number;
        char membername[20];
        char membertype[] = "HIG";
};
void main()
{
        Supergym personl, person.2;
        cin<<"Member Number:";
        cin>>personl.membernumber;
        cout<<"Member Name :";
        cin>>personl.membername;
        personl.member type = "MIG";
        person2 = personl;
        cin<<"Member Number:"<<person2.membernumber;
        cin<<"Member Name"<<person2.membername;
        cin<<"Member Number:"<<person2.membertype;
}
```

(e) Write the output of the following program: (3)
```
# include <iostream.h>
int func(int &x, int y = 10)
{
        if (x%y == 0)
                return ++x;
        else
                return y--;
}
```

```
void main()
{       int p=20, q=23;
        q=func (p,q);
        cout << p << " " << " " << q << endl;
        p=func (q);
        cout<< p << " " << " " << q << endl;
        q=func (p);
        cout << p << " " << " " << q << endl;
}
```

(f) Give the output of following program segment (Assuming all required header files   (3)
are included in the program).

```
void main()
{
        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;
}
```

(g) Study the following program and select the possible output(s) from the options   (2)
given below :

```
#include <iostream.h>
#include <stdlib.h>
const int LIMIT = 4 ;
void main ( )
{
        randomize ( ) ;
        int Points;
        Points = 100 + random(LIMIT) ;
        for (int P=Points ; P>=100 ; P– –)
                cout<<P<<"#" ;
        cout<<endl;
}
```

   (1) 103#102#101#100#   (2) 100#101#102#103#
   (3) 100#101#102#103#104#   (4) 104#103#102#101#100#

Q-2 (a) Differentiate between Constructor and Destructor function in context of Classes   (3)
and Objects using **C++**

(b) Answer the question (i) and (ii) after going through the following class :   (2)

```
class WORK
{
        int WorkId;
        char WorkType;
        public:
        WORK( )                    //Function 1
        {           cout<<"Un-Allocated"<<endl;
        }
        void Status( )             // Function 2
        {           cout<<WorkId<<":"<<WorkType<<endl;
        }
```

```
        WORK( )                          // Function 3
        {
                WorkId=10;
                WorkType="T";
        }
        WORK (WORK &W)                   // Function 4
        {
                WorkId = W.WorkId+12;
                WorkType=W.WorkType+1;
        }
 };
```

(i) Which member function out of Function 1, Function 2, Function 3 and Function 4 shown in the above definition of class Work is called automatically, when the scope of an object gets over? Is it known as Constructor OR Destructor OR Overloaded Function OR Copy Constructor?

(ii) WORK W;   //Statement 1
WORK Y(W);   // Statement 2
which member function out of Function 1, Function 2, Function 3 and Function 4 shown in the above definition of class Work will be called on execution of statement written as Statement 2? What is this function specifically known as out of Destructor or Copy Constructor or Default Constructor?

(c) Answer the questions (i) and (ii) after going through the following class :   (2)

```
        class TEST
        {
                int Regno, Max, Min, Score ;
                public :
                TEST( )                          //Function 1
                {    Regno = 101 ; Max=100; Min = 40 ; score = 75 ;
                }
                TEST(int Pregno, int Pscore)     //Function 2
                {    Regno = Pregno ; Max = 100 ; Min = 40 ; Score = Pscore ;
                }
                TEST( )                          //Function 3
                {    cout << "TEST Over" << endl ;
                }
                void Display( )                  //Function 4
                {    cout << Regno << ":" <<Max<< ":" << Min << endl ;
                     cout << "[Score]" << Score << endl;
                }
        } ;
```

(i) As per Object Oriented Programming, which concept is illustrated by Function 1 and Function 2 together?

(ii) What is Function 3 specifically referred as? When do you think, Function 3 will be invoked / called?

(d) Answer the questions (i) and (ii) after going through the following class   (2)

```
        class Maths
        {
                char Chapter [20];
                int Marks;
                public:
                Maths ( ) //Member Function 1
                {
                        strcpy (Chapter, "Geometry");
                        Marks = 10;
                        cout<<"Chapter Initialised";
                }
```

```
        ~Math ( ) //Member Function 2
        {       cout<<"Chapter Over";
        }
```
};
- (i) Name the specific features of class shown by Member Function 1 and Member Function 2 in the above example.
- (ii) How would Member Function 1 and Member Function 2 get executed?

(e) Define a class **TravelPlan** in C++ with the following descriptions :   (4)
Private Members:
- PlanCode of type long
- Place of type character array [string]
- Number_of_travellers of type integer
- Number_of_buses of type integer

Public Members:
- A *constructor* to assign initial values of Plan Code as **1001**, Place as **"Agra"**, Number_of_travellers as **5**, Number_of_buses as **1**
- A function *NewPlan ( )* which allows user to enter PlanCode, Place and Number_of_travellers. Also, assign the value of Number_of_buses as per the following conditions :

Number_of_travellers Number_of_buses Less than 20	Buses=1
Equal to or more than 20 and less than 40	Buses=2
Equal to 40 or more than 40	Buses=3

- A function *ShowPlan( )* to display the all the data members on screen.

(f) Consider the following and answer the questions given below :   (4)
```
class School
{       int A;
        protected :
        int B,C;
        public:
        void INPUT (int);
        void OUTPUT();
};
class Dept  protected :  School
{       int X Y;
        protected :
        void IN (int, int);
        public:
        void OUT();
};
class Teacher : public Dept
{       int P;
        void DISPLAY (void);
        public :
        void ENTERO;
};
```
- (i) Name the base class and derived class of the class Dept.
- (ii) Name the data member (s) that can be accessed from function OUT().
- (iii) Name the private member function(s) of class Teacher.
- (iv) Is the member function OUT() accessible by the objects of Dept?

Q-3 (a) Write a function in C++ to count the no. of "**Me**" or "**My**" words *(case sensitive)*   (4)
present in a text file "DIARY.TXT". If the file "DIARY.TXT" content is as follows :
My first book was Me and My family. It gave me chance to be known to the world.
The output of the function should be Count of Me / My in file : 3

(b) Explain the use of statement *f.read((char*)&s,sizeof(s));* statement of C++.   (2)