ANANDALAYA
MID-TERM EXAMINATION
Class – XII

Subject: Computer	M.M: 70
Date : 27/9/2019	Time: 3 Hour

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

Q-1 A What is the difference between Type Casting and Automatic Type conversion? Also, give (2)
suitable C++ code to illustrate both.

B Write the names of the header files , which is/ are required to run/execute the following (2)
C++ code :

```
void main()
{
        char CH,Text[]="+ve Attitude";
        for(int I=0; Text[i]!='\0';i++)
                if(Text[I]==' ')
                        cout<<endl;
                else
                {
                        CH=toupper(Text[I]);
                        cout<<CH;
                }
}
```

C Rewrite the following code after removing the syntax error(s), if any and underline the (3)
correction(s) made.

```
include<iostream.h>
typedef char[80] String;
void main()
{
        String S="Peace";
        int L = strlen(S)
        cout << S <<  ' has' << L << 'characters' << endl;
}
```

D Find the output of the following program: (4)

```
#include<iostream.h>
void SwitchOver(int A[], int N, int Split)
{
        for(int K=0;K,N;K++)
                if(k<Split)
        else
                A[K]*=K;
}
void Display(int A[], int N)
{
        for(int K=0;K<N;K++)
                (K%2==0)? cout<< A[K]<<"%" : cout<<A[K] << endl;
}
```

```cpp
void main()
{
        int H[]={30,40,50,20,10,5};
        SwitchOver(H,6,3);
        Display(H,6);
}
```

E   Find the output of the following program: (4)
```cpp
#include<iostream.h>
void main()
{
        int *Queen, Moves[]={11,22,33,44};
        Queen=Moves;
        Move[2]+=22;
        cout<< "Queen @" << *Queen << endl;
        *Queen-=11;
        Queen+=2;
        cout<< "Now @"<< *Queen<< endl;
        Queen++;
        cout<<"Finally @" << * Queen<< endl;
        cout << "New Origin @" << Move[0]<< endl;
}
```

F   Go through the C++ code given below, and find out the possible output or outputs from the   (2)
    suggested Output Options (i) to (iv). Also write the minimum and maximum values, which
    can be assigned to the variable MyNum.
```cpp
#include<iostream.h>
#include<stdlib.h>
void main()
{
        randomize();
        int MyNum, Max=5;
        MyNum=20+random(Max);
        for(int N=MyNum;N<=25;N++)
                cout<<N<<"*";
}
```
    (i)   20*21*22*23*24*25   (ii)   22*23*24*25
    (iii) 23*24*   (iv)   21*22*23*24*25

G   Write a function in C++ that accepts one dimensional array of Integer numbers and size as   (4)
    parameter and display numbers in ascending order.

Q-2   A   Differentiate between Constructor and Destructor function with respect to Object Oriented   (2)
          Programming.

      B   Observe the following C++ code and answer the questions (i) and (ii). Assume all
          necessary files are included:
```cpp
class FICTION
{
        long FCode;
        char FTitle[20];
        float FPrice;
        public:
        FICTION ()                                  //Member Function 1
        {
```

```cpp
                cout<<"Bought"<<endl;
                FCode=100; strcpy(FTitle,"Noname"); FPrice=50;
        }
        FICTION(int C,char T[],float P)              //Member Function 2
        {
                FCode=C;
                strcpy(FTitle,T);
                FPrice=P;
        }
        void Increase (float P)                      //Member Function 3
        {
                FPrice+=P;
        }
        void Show ()                                 //Member Function 4
        {
                cout<<FCode<<":"<<FTitle<<":"<<FPrice<<endl;
        }
        ~FICTION ()                                  //Member Function 5
        {
                cout<<"Fiction removed!"<<endl;
        }
};
void main ()                                    //Line 1
{                                               //Line 2
        FICTION Fl,F2(101,"Dare",75);           //Line 3
        for (int I=0;I<4;I++)                   //Line 4
        {                                       //Line 5
                Fl.Increase(20);                //Line 6
                F2.Increase(15);                //Line 7
                Fl.Show();                      //Line 8
                F2.Show();                      //Line 9
        }                                       //Line 10
}                                               //Line 11
```

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

- Data Encapsulation
- Data Hiding
- Polymorphism
- Inheritance

   (ii) How many times the message "Fiction removed!" will be displayed after executing (1) the above C++ code? Out of Line 1 to Line 11, which line is responsible to display the message "Fiction removed! "?

(C) Write the definition of a class METROPOLIS in C++ with following description: (4)
Private Members

Mcode	Data member for Code (an integer)
MName	Data member for Name (a string)
MPop	Data member for Population (a long int)
Area	Data member for Area Coverage (a float)
PopDens	Data member for Population Density (a float)
CalDen()	A member function to calculate Density as PopDens / Area

Public members

Enter ()	A function to allow user to enter values of Mcode, MName, MPop, Area and call CalDen() function

ViewALL ()	A function to display all the data members also display a message "Highly Populated Area" if the Density is more than 12000

(D) Answer the questions (i) to (iv) based on the following: (4)

```
class PRODUCT
{
        int Code;
        char Item[20];
    protected:
        float Qty;
    public:
        PRODUCT();
        void GetIn();
        void Show();
} ;
class WHOLESALER
{
        int WCode;
    protected:
        char Manager[2 0];
    public:
        WHOLESALER();
        void Enter();
        void Display();
} ;
class SHOWROOM : public PRODUCT, private WHOLESALER
{
        char Name[20],City[20];
    public:
        SHOWROOM();
        void Input();
        void View();
} ;
```

(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 SHOWROOM.

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

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

Q-3 (A) Write the definition of a function FixPay(float Pay[], int N) in C++, which should modify each element of the array Pay having N elements, as per the following rules: (4)

Existing Value of Pay	Pay to be changed to
If less than 100000	Add 25% in the existing value
If >=100000 and <20000.	Add 20% in the existing value
If >=200000	Add 15% in the existing value

(B) T[20][50] is a two dimensional array, which is stored in the memory along the row with each of its element occupying 4 bytes, find the address of the element T[15][5], if the element T[10][8] is stored at the memory location 52000.   (4)

(C) Write definition for a function **SHOWMID(int P[][5],int R,int C)** in C++ to display the (4)
elements of middle row and middle column from a two dimensional array P having R
number of rows and C number of columns.
For example, if the content of array is as follows:

115	112	116	101	125
103	101	121	102	101
185	109	109	160	172

The function should display the following as output:

103 101 121 102 101 116 121 109

(D) Write definition for a function **SHOWTop(int P[][5],int R,int C)** in C++ to display the (4)
elements of middle row and middle column from a two dimensional array P having R
number of rows and C number of columns.
For example, if the content of array is as follows:

115	112	116	101	125
43	45	56	56	90
18	19	93	89	72

The function should display the following as output:

115 112 116 101 125

Q-4 (A) Write function definition for WORD4CHAR() in C++ to read the content of a text file (2)
FUN.TXT, and display all those words, which has four characters in it.
Example:

If the content of the file fun.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 WORD4CHAR() should display the following:

| When used play with days were that time |

(B) Write a definition for function BUMPER( ) in C++ to read each object of a binary file (3)
GIFTS.DAT, find and display details of those gifts, which has remarks as "ON
DISCOUNT". Assume that the file GIFTS.DAT is created with the help of objects of class
GIFTS, which is as defined below:

```
class GIFTS
{
        int ID;
        char Gift[20],Remarks[20];
        float Price;
        public:
        void Takeonstock()
        {
                cin>>ID;
```

```
                gets(Gift);
                gets(Remarks);
                cin>>Price;
        }
        void See()
        {
                cout<<ID<<":"<<Gift<<":"<<Price<<"":"<<Remarks<<endl;
        }
        char *GetRemarks()
        {
                return Remarks;
        }
};
```

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

```
class MEMBER
{
        int Mcode;char MName[20];
        public:
        void Register();void Display();
} ;
void main()
{
        fstream MFile;
        MFile.open("MEM.DAT",ios::binary|ios::in);
        MEMBER M;
        MFile.read((char*)&M, sizeof(M) );
        cout<<"Rec:"<<MFile.tellg()/sizeof(M)<<endl;
        MFile.read((char*)&M, sizeof(M) );
        MFile.read((char*)&M, sizeof(M) );
        cout<<"Rec:"<<MFile.tellg()/sizeof(M)<<endl;
        MFile.close();
}
```

Q-5 (A) Observe the following STUDENTS and EVENTS tables carefully and write the name of (2) the RDBMS operation which will be used to produce the output as shown in LIST? Also, find the Degree and Cardinality of the LIST.

STUDENTS

No	Name
1	Tara Mani
2	Jaya Sarkar
3	Tarini Trikha

EVENTS

Event Code	Event Name
1001	Programming
1002	IT Quiz

LIST

No	Name	Event Code	Event Name
1	Tara Mani	1001	Programming
1	Tara Mani	1002	IT Quiz
2	Jaya Sarkar	1001	Programming

2	Jaya Sarkar	1002	IT Quiz
3	Tarini Trikha	1001	Programming
3	Tarini Trikha	1002	IT Quiz

(B) Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are (8) based on the tables

Table: VEHICLE

CODE	VTYPE	PERKM
101	VOLVO BUS	160
102	AC DELUXE BUS	150
103	ORDINARY BUS	90
105	SAV	40
104	CAR	20

Note:
• PERKM is Freight Charges per kilometer
• VTYPE is Vehicle Type Table: TRAVEL

Table: TRAVEL

NO	NAME	TDATE	KM	CODE	NOP
101	Janish Kin	2015-11-13	200	101	32
103	Vedika sahai	2016-04-21	100	103	45
105	Tarun Ram	2016-03-23	350	102	42
102	John Fen	2016-02-16	90	102	40
107	Ahmed Khan	2015-01-10	75	104	2
104	Raveena	2016-05-28	80	105	4
106	Kripal Anya	2016-02-06	200	101	25

Note:
• NO is Traveller Number
• KM is Kilometer travelled
• NOP is number of travellers travelled in vehicle
• TDATE is Travel Date

(i) To display NO, NAME, TDATE from the table TRAVEL in descending order of NO.
(ii) To display the NAME of all the travellers from the table TRAVEL who are travelling by vehicle with code 101 or 102.
(iii) To display the NO and NAME of those travellers from the table TRAVEL who travelled between '2015-12-31' and '2015-04-01'.
(iv) To display all the details from table TRAVEL for the travellers, who have travelled distance more than 100 KM in ascending order of NOP.
(v) SELECT COUNT(*), CODE FROM TRAVEL GROUP BY CODE HAVING COUNT(*)>l;
(vi) SELECT DISTINCT CODE FROM TRAVEL;
(vii) SELECT A.CODE, NAME, VTYPE FROM TRAVEL A,VEHICLE B WHERE A.CODE=B.CODE AND KM<90;
(viii) SELECT NAME,KM*PERKM FROM TRAVEL A,VEHICLE B WHERE A.CODE=B.CODE AND A.CODE='105';