CLASS- XII

Time allowed : 3 hours   Maximum Marks : 70

1. (a) Explain the difference between an actual parameter and formal parameter.   2

    (b) Name the header files that shall be needed for the following built in functions.
        (i) frexp( )   (ii) strrev( )   1

    (c) Rewrite the following program after removing the syntactical errors(if any).
        Underline each correction.   2

```
#include [iostream.h]
class BILL
{
   int Charge;
   PUBLIC:
        void Increment( ) { cin>> Charge;}
        void Show{ cout >> Charge;}
};
void main( )
{
        BILL B;
        B.Increment( );
        Show ( );
}
```

    (d) Find the output of the following program when the input is (i) 'A' (ii) 'C' (iii) 'D'
        (iv) 'F'?   3

```
………
……….
char ch;
cin>> ch;
switch (ch)
{       case 'A' : cout<< "  Percentile A \n";
        case 'B' : cout<< "  Percentile B \n";
        case 'C' : cout<< "  Percentile C \n";break;
        case 'A' : cout<< "  Percentile D \n"
        default : cout<< "  Percentile F \n"
}
```

    (e) Give the output of the following program :   2

```
class Dog
{
        public:
                Dog( );          // Constructor
                ~ Dog( )         //Destructor
                void setAge(int age);
                int getAge( );
                void setWeight(int weight);
                int getWeight( );
```

```
                void speak( );
        private:
                int age;
                int weight;
};
Dog :: Dog( )
{
        age = 0;
        weight = 0;
        cout << "Dog constructor called" << endl;

}
        Dog :: ~Dog( )
{
        cout << "Dog destructor called" << endl;

}
main( )
{
        Dog D1,D2,D3;
        cout<<" Objects are created";
        Dog D4;
        cout << "Objects are created";
        Dog D5;
}
```

(f) Observe the following program GAME.CPP carefully, if the value of Num entered by user is 15, write the correct possible output from the options given below: 2

```
# include<stdlib.h>
# include<iostream.h>
void main ( )
{
        randomize( );
        int Num, Rndnum;
        cin>> Num;
        Rndnum = random(Num) + 15;
        for( int N = 1; N <= Rndnum ; N++)
                cout << N << " " ;
}
```

(i)   1 2 3 4 5 6 7 8 9
(ii)   1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
(iii)   1 2 3 4 5 6 7 8 9 10 11 12
(iv)   1 2 3 4 5

2. (a) What do you mean by static data members of a class? Explain the characteristics of a static data member.   2
   (b) Answer the question (i) and (ii) after going through the following class :   2

```
class Animal
{
        int Age;
public :
```

```
            Animal ( )                    // Function 1
            {        Age= 0;
                     cout<< " Animal Detail" << endl;
            }
            void Details ( )             // Function 2
            {
                     cout<< " Wild Animall" << endl;
            }
            Animal( int D)               // Function 3
            {
                     Age = D;
            }
            Animal(Animal &M)          // Function 4
            {
                     Age = M.Age ;
            }
      };
```

(i) Which category of constructor – Function 4 belongs to and what is the purpose of using it ?

(ii) Write the statements that would call the member Functions 1 and 3.

(c) Declare a class having following: 4

Data Members:
   Name of society
   House Number
   Number of members
   Flat type
   Income

Member Functions:
   To read data member
   To allocate flat according to income
   Income >= 50000 Flat type = HIG
   Income >= 25000 and Income < 50000 Flat type = MIG
   Income < 25000 Flat type = LIG

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

```
class CUSTOMER
{
    int Cust_no;

    char Cust_Name[20];
    protected:
            void Register( );
    public:
            CUSTOMER ( );
            void Status( );
};
class SALESMAN
{
    int Salesman_no;
```

```
        char Salesman_Name[20];
        protected:
                float Salary;
        public:
                SALESMAN ( );
                void Enter( );
                void Show( );
};
class SHOP : private CUSTOMER, public SALESMAN
{
        char Voucher_No[10];
        char Sales_Date[8];
        public:
                SHOP ( );
                void Sale_Entry( );
                void Sale_Detail ( );
};
```

(i)Write names of all the member functions which are accessible from the objects
    belonging to class SHOP..
(ii)Write the base classes of SHOP.
(iii)Write names of all the data members, which are accessible from member
        functions of class SHOP.
(iv) How many bytes will be required by an object belonging to SHOP?

3.

(a) Write a C++ function to display those elements of a two dimensional array   4
    T[4][4] which are even and replace all the odd elements by 0. Assume the content of
    the array is already present and the function prototype is as follows:
                void Show(int T[4][4]);
(b) For an array of real numbers RealArr[20][20], find the address of RealArr[10][12] if
    RealArr[1][1] is stored in location 1000. Assume each real numbers requires 4 bytes.
    Show steps in your calculation.   4
(c) Give the necessary implementation of a linked list implementation of a stack
    containing integers. Also write a user defined function in C++ to pop an element from
    this stack.   4
(d) Considering the following key set : 41, 28, 74, 11, 65, 58 , use insertion sort to sort the
    data in ascending order and indicate the sequences of steps required.   2
(e) Evelute the following postfix notation of expression using a stack and show the
    contents of the stack after execution of each operation: 2
        5 , 11 , - , 6 , 8 ,+ , 12 **,** * , /

4. (a) Observe the program segment given below carefully and fill the blanks marked as
        Statement 1 and Statement 2 using seekp( ) and seekg( ) functions for performing
        the required task.   1
```
# include<fstream.h>
class Item
{
        int num;
        char Item_name[25];
```

```
        public:
    // Function to search and display the content from a particular record number.
        void Search(int);
    // Function to modify the content of a particular record number.
        void Modify(int);
};
void Item : : Search( int Rno)
{
        fstream File;
        File.Open("STOCK.DAT", ios::binary |ios::in);
        _____     // Statement 1
        File.read((char*) this, size of (Item));
        cout<< num << " = = > "  << Item_name << endl;
        File.close( );
}
void Item : : Modify( int Rno)
{
        fstream File;
        File.Open("STOCK.DAT", ios::binary | ios::in | ios:: out);
        cout<< Num;
        cin.getline(Item_name, 25);
        _____     // Statement 2
        File.write((char*) this, size of (Item));
        File.close( );
}
```

(b) Assume a text file " VOWEL.TXT" is already created. Using this file create a function to create two files "LOWER.TXT" which contains all the lowercase vowels and UPPER.TXT" which contains all the uppercase vowels.   2

(c) Assuming the class TRANSPORT given below, write functions in C++ to perform following: 3
   (i)   Write the objects of TRANSPORT to a binary file.
   (ii)   Read the objects of TRANSPORT from binary file and display them on screen.

```
Class TRANSPORT
{
        int wheels;
        char passenger[20] ;
        public:
                void input( )
                { cin>>wheels;
                  gets(passenger);
                 }
                void output( )
                { cout<<wheels<< " "<< passenger << endl ; }
};
```

5. (a) Define Foreign Key and Candidate Key.   2
    (b) Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries

TABLE : ART

Name	Code	Category	Title	Status	Price	Year
G.Hussain	2098	Water	Demons	Sold	70000	1980
J.Juneja	3099	Oil	Twilight	Not Sold	8000	1990
Y.D.Sharma	8001	Collage	Masses	Sold	9500	1968
A.D'Souza	7901	Oil	Treees	Sold	13000	1977
Nevill	5400	Water	Holiday	Not Sold	8900	1977
A.Dasgupta	3400	Oil	Kites	Not Sold	9000	1982
S.Rohatgi	2100	Oil	Ruins	Sold	18000	1981
P.Arora	3100	Water	Castle	Not Sold	20000	1965
Col.Singhvi	2211	Water	Valley	Sold	7000	1962

(i)   Display the complete list of all the paintings that belong to category Oil.
(ii)   Display only the most expensive painting in each category.
(iii)   Display the name of the painter, title of painting and price in descending order of Year.
(iv)   Display the list of all the paintings whose price between 8000 and 12000.
(v)   Select AVG(Price) from Paint where Price < 8500;
(vi)   Select COUNT(*), status from Paint group by Status;
(vii)   Select COUNT(DISTINCT Category) fom Paint;
(viii) Select MIN(Code) from Paint where Price > 10000;

6. (a) State and verify Distributive Law using Truth Table.   2
   (b) Design a logic circuit to realize the Boolean function F(X,Y)=X .Y + X ' Y '   1
   (c) Convert (A+B)(AB' + AC)(A'C' + B'C) to SOP form.   2
   (d) Draw K-maps for the following Boolean functions and find their minimal forms:
        F(X,Y,Z,W)   = Σ (0, 1, 2, 3, 5, 6, 8, 10, 11, 14, 15)   3

7. (a) What is Cookie?   1
   (b) Give one merit and demerit each of the following topologies: 2
        (i) Star   (ii) Ring.
   (c) Expand the following terminologies.
        (i) DHTML   (ii) XML.   1
   (d) NAVKETAN PUBLIC SCHOOL in Nanital is setting up the network between its
        different wings. There are 4 wings named as SENIOR(S), MIDDLE(M), JUNIOR(J)
        and OFFICE(O). Distance between the various wings are given below:

Wing O to Wing S	100m
Wing O to Wing M	200m
Wing O to Wing J	400m
Wing S to Wing M	300m
Wing S to Wing J	100m
Wing J to Wing M	450m

No. of Computers

Wing O	10
Wing S	200

Wing M	100
Wing J	50

(i)   Suggest a suitable Topology for networking the computer of all wings.   1
(ii)   Name the wing where the server to be installed. Justify your answer.   1
(iii)   Suggest the placement of Hub/Switch in the network.   1
(iv)   Mention an economic technology to provide internet accessibility to all wings. 1