CLASS XII
GUESS PAPER
COMPUTER SCENCE (083)

TIME: 3 hours   MARKS: 70

- Please check that this question paper contains 11 printed pages.
- Code-snippets in questions may be printed wrong rectify the errors and answer accordingly.
- Please check that this question paper contains **7** main questions.
- Please set time of 15 minutes allotted to read this question paper .Try to answer the question in the sequence.
- All questions are compulsory. Presentation of answers should be neat.
- Rewrite the answer again if there is any striking or scratching.

SECTION A

Q1.

a. What is the difference between call by reference and call by value with respect to memory allocation? Give suitable example to illustrate call by reference.   **2**

b. Observe the following C++ code and write the name(s) of the header files, which will be essentially required to run it.   **1**

```
    void main( )
 {
    char ch, str[20] ;
    cin >> str;
    ch = toupper (str  [0] ) ;
    cout <<  str  <<  "starts with"  <<  ch  <<  endl;
 }
```

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

```
# include < iostream.h >
class Item
{
        long Id, Qty ;
public:
        void Purchase { cin >> Id >> Qty ; }

        void Sale ( )
        {
        cout << setw (5) << Id << " OLD " << Qty << endl ;
        cout << "  New : " << - -Qty << endl ;
        }
}
void main( )
{
        Item I;
        Purchase ( );
        Item. Sale ( );
    }
```

d. Find the output of the following C++ code: **2**
   (Assume all header files are already included in the program)

```
typedef  char Text [80] ;

void Jumbleup ( Text T )
{
    int L = strlen ( T );
    for ( int C = 0; C < L-1; C + = 2)
    {
        char CT  = T [C] ;
        T [ C ] = T [ C + 1] ;
        T [ C + 1] = CT ;
    }
    for ( T [ C ] > = 'M'  &&  T [ C ] < = 'U' )
        T [ C ] = '@';
}
```

```
void main ( )
{
    Text str = "HARMONIOUS" ;
    Jumbleup ( str ) ;
    cout  <<  str <<  endl ;
}
```

e. Write the output of the following C++ program code. In the following code, what will be the possible output from the following options i to iv? Justify the answer.   **2**

```
# include < iostream.h >
# include < conio.h >
# include < stdlib.h >
const int LIMIT = 3;

void main ( )
{
        randomize ( );
        int Points;

        Points=50 + random (LIMIT);

        for ( int P = points;  P >= 50; P- - )

        cout  <<  P  << "#"  << endl;

        getch ( );

}
```

   i) 53#52#51#50#

   ii) 50#51#52#

   iii) 50#51#53

   iv) 51#50#

f. Observe the following code carefully and obtain the output, which will appear on the screen after execution.   **2**

```
void main( )
{
    int *p[10];
```

```
int score[ ] ={ 80, 30, 74, 50, 34, 67, 0, 98 };
for ( int  i =0;  score [i] != 0;  i++)
{
        p[i]  = &score[i] ;
        *(p[i]) += 10 ;
 }
int count =0;
while (count <i)
{
        int q = *(p[count]) ;
        count ++ ;
        if(q > 50)   cout << q << "," endl ;
}
}
```

Q2.
a. Write any four important characteristics of Object Oriented Programming.
   Give example of any one of the characteristics using C++.   **2**

b. Observe the following C++ code and answer the following questions (i) and (ii).
    Assume all header files are included.   **2**

```
class seminar
{
    int time;
    public:
    seminar( )                                           // Function 1
    { time =20;  cout  <<  "Seminar starts now"  <<  endl;  }
     void lecture ( )                                    // Function 2
    { cout  <<  "Lectures in the Seminar"  <<  endl;  }
    seminar (int duration)                               // Function 3
    { time = duration; cout  <<  "Seminar starts now "  << endl;  }
    ~ seminar( )                                         // Function 4
    {cout<<" Vote of thanks "<<endl; }
};
```

   i) In Object Oriented Programming, which concept is illustrated by
Function 1and Function 3 together ?

  ii) In Object Oriented Programming, what is Function 4 referred as and when does it get
invoked / called ?

c. Define a class in C++ with following description: **4**

  Private Members

    A data member FlightNumber of type integer

    A data member Destination of type string

    A data member Distance of type float

    A data member Fuel of type float

    A member function CALFUEL ( ) to calculate the value of Fuel as per the following
criteria:

Distance	Fuel
<=1000	500
more than 1000 and <=2000	1100
more than 2000	2200

  Public Members

  A function FEEDINFO ( ) to allow user to enter values for FlightNumber, Destination,
Distance & call function CALFUEL ( ) to calculate the quantity of Fuel.

  A function SHOWINFO ( ) to allow user to view the content of all the data members.

d. What do you understand by copy constructor? Give the example of copy constructor

  through defining it within a class. Also give the statement

  invoking it. **2**

e. Answer the questions (i) to (iv) based on the following: **4**

  class A

  {

      long Cust_no;

      char Cust_Name[20];

    protected:

      int Register(float);

    public:

```
                CUSTOMER (long double);

                char Status (char);

};

  class B: public A

  {

                 long Salesman_no;

                char Salesman_Name[20];

        protected:

                float Salary;

        public:

                SALESMAN ( );

                double Enter ( );

                int Show ( );

  };


  class C : private B

{

        char Voucher_No[10];

         public:

         SHOP ( );

        char Sales_Date[8];

        float Sales_Entry ( );

        char Sales_Detail ( );

};

 void main ( )

   {  C  Z ;  }
```

(i) Write the names of members which are accessible through Z.
(ii) What type of inheritance is implemented in the above example?
(iii) Write the names of all the data members which are accessible from class C.
(iv) How many bytes will be required by an object of class B and class C?

Q3.
a. Evaluate the following POSTFIX notation. Show status of stack after every
step of evaluation.   **2**

    32, 4, /, 2, *, 12, 3, -, +

b. An array A[10][30] is stored in the memory along the column with each of its elements
occupying 4 bytes. Find out the address of an element A[2][5], if the location A[5][10]
is stored at the address 4000**.**   **2**

c. Write a function to check if the passed array of 20 integers is sorted or not. The function
should return 1 if arranged in ascending order, -1 if arranged in descending order, 0 if it
is not sorted.   **3**

d. Give the necessary declaration of class for the linked implemented **stack** through
defining the functions to push and pop the nodes. Each node is containing ItemCode
(int) and Price (float) in addition to pointer field.   **3**

e. Write a user defined function ADDEnd (int a[] [4], int N , int M) in C++ to find and
display the sum of all the values which are ending with 2(i.e units place)   **2**

Q4.
a. Write a function in C++ to count and display the number of lines not starting with
alphabet 'A' present in a text file "STORY.TXT".   **2**

  Example:
  If the file "STORY.TXT" contains the following lines:
The rose is red.
A girl is playing there.
There is a playground.
An aeroplane is in the sky.

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(*The function should display the output as*   3)

b. Assuming the class DRINK as follows :   **2**
   class DRINK
   {
            int Qty;
            char Name[20];
        public:
             void getdetails ( )
              {
                  gets (Name) ;
                  cin >> Qty ;
              }
              void showdetails ( )
              { cout << Qty << " " << Name   << endl ; }
    } ;

   i). Write the objects of DRINK to a binary file.
   ii). Reads the objects of DRINK from the binary file and display them on screen.

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

   #include <fstream.h>
   class Client
   {
      long Cno ;
      char Name [20],   Email [30];
    public:
       //Function to allow the user to enter data
       void Enter ( );
      //Function to allow the user to enter(modify) Email
       void Modify ( );
       long ReturnCno ( )
       { return Cno; }

```
    };
     void ChangeEmail ( )
      {
        Client C;
        fstream F;
        F.open ( "INFO.DAT" ,  ios :: binary | ios :: in :: ios out);
        long Cnoc;                  //Clients no. whose Email needs to be changed
        cin >> Cnoc;
         while ( F.read ( (char *) &C, sizeof (c) ) )
        {
              if (Cnoc = = C . ReturnCno (  ) )
              {
                    C . Modify ( );
                    int Pos =_____        // statement 1
                                                to find current
                                                position of file  pointer


                          _____    //statement 2
                                            To move the file pointer to write
                                            the modified record back into
                                            the file

          F.write (char*) &C, sizeof (C));
                }
        }
              F.close
      }
```

Q5.

a. Observe the following PARTICIPANTS and EVENTS tables carefully and write the name of the RDBMS operation which will be used to produce the output as shown in RESULT? Also find the Degree and Cardinality of the result.   **2**

TABLE: PARTICIPANTS

PNO	NAME
1	Aruanabha Tariban

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| 2 | John Fedricks |
| 3 | Kanti Desai |

TABLE: EVENTS

EVENTCODE	EVENTNAME
1001	IT Quiz
1002	Group Debate

TABLE: RESULT

PNO	NAME	EVENT CODE	EVENT NAME
1	Anradhana Pradhan	1001	IT Quiz
1	Anradhana Pradhan	1002	Group Debate
2	Jhon Fedricks	1001	IT Quiz
2	Jhon Fedricks	1002	Group Debate
3	Kanti Desai	1001	IT Quiz
3	Kanti Desai	1002	Group Debate

b. Consider the following tables PRODUCT and CLIENT. Write SQL commands for the statement (i) to (iv) and give outputs for SQL queries (v) to (viii) **6**

Table: **PRODUCT**

P_ID	Product Name	Manufacturer	Price
TP01	TalcomPowder	LAK	40
FW05	Face Wash	ABC	45
BS01	Bath Soap	ABC	55
SH06	Shampoo	XYZ	120
FW12	Face Wash	XYZ	95

Table: CLIENT

C_ID	Client Name	City	P_ID
01	Cosmetic Shop	Delhi	FW05
06	Total Health	Mumbai	BS01
12	Live Life	Delhi	SH06
15	Pretty Woman	Delhi	FW12
16	Dreams	Banglore	TP01

i. To display the details of those Clients whose city is Delhi.
ii. To display the details of Products whose Price is in the range of 50 to 100 (Both values included).
iii. To display the ClientName, City from table CLIENT, and ProductName and Price from table PRODUCT, with their corresponding matching P_ID.
iv. To increase the Price of all Products by 10.
v. SELECT DISTINCT City FROM CLIENT.
vi. SELECT Manufacturer, MAX (Price), MIN(Price), COUNT(*) FROM PRODUCT GROUP BY Manufacturer;
vii. SELECT ClientName, Manufacturer Name FROM PRODUCT, CLIENT WHERE Client.Prod_Id = Product.P_Id;
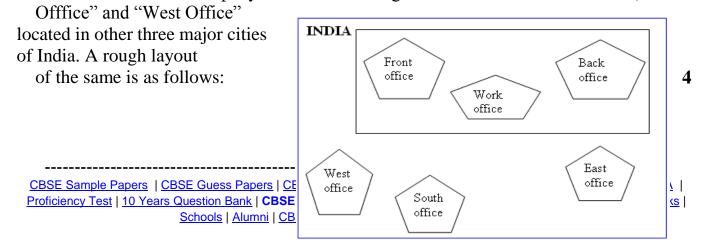viii. SELECT ProductName, Price * 4 FROM PRODUCT.

Q6.

a. Give duals for the following: **2**
     i) A+ ĀB   ii) AB+ĀB

b. State and prove DeMorgan's First Law**.**   **2**

c. Draw logic circuit diagram for the following expression**:**   **2**
          $\overline{Y}$= AB+BC+CA

d. Reduce the following Boolean expression using K-Map**:**   **3**
          $F(A,B,C,D)=\prod(0,1,3,5,6,7,10,14,15)$

Q7.

a. Differentiate between Packet switching and Message switching?   **1**
b. Expand the following terms**:**   **2**
     i) WAIS   ii) VoIP   iii) GSM   iv) SMTP

c. "Bhartiya Connectivity Association" is planning to spread their offices in four major cities in India to provide regional IT infrastructure support in the field of Education & Culture. The company has planned to setup their head office in New Delhi in three locations and have named their New Delhi offices as "Front Office ","Back Office "and "Work Office ".The Company has three more regional offices as "South Office ","East Offfice" and "West Office"
located in other three major cities of India. A rough layout of the same is as follows: **4**

Approximate distance between these offices as per network survey team is as follows:

Place From	Place To	Distance
Back Office	Front Office	10 KM
Back Office	Work Office	70 KM
Back Office	East Office	1291KM
Back Office	West Office	790 KM
Back Office	South Office	1952KM

In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

Front Office	100
Work Office	20
East Office	50
West Office	50
SouthOffice	50

1. Suggest network type(out of LAN,MAN,WAN) for connecting each of the following set of their offices:
   Back Office and Work Office
   Back Office and south Office
2. Which device you will suggest to be produced by the company for connecting all the computers with in each of their offices out of the following devices?

   Switch/Hub   Modem   Telephone
3. Which of the following communication medium, you will suggest to be produced by the company for connecting their offices in New Delhi for very effective and fast communication?

   Telephone Cable   Optical Fibre   Ethernet Cable

4. Suggest a cabling layout for connecting the company's local offices located in New Delhi. Also, suggest an effective method /technology for connecting the company's regional offices –"East Office", "West Office" and "South Office" with offices located in New Delhi.

d. Write any two important characteristics of cloud computing?   **1**

e. Write the names of any two popular open source software, which are used as operating systems.   **1**

f. What is hacking and cracking?   **1**

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