

Sample Paper
Class – XII
Subject – Computer Science

- Please check that this question paper contains 7 printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains 7 questions.
- Please write down the serial number of the question before attempting it.

Code No. 083

Time allowed: 3 hours

Maximum Marks: 70

Instructions:

- (i) All questions are compulsory.
- (ii) Programming language: C++

1. (a) Write the names of the header files to which the following belong : **1**
(i) random() (ii) fabs()
- (b) What is variable scope? What is the difference between Local and Global scope? Explain with an example. **2**
- (c) Identify the errors in the following program. **2**
- ```
#include<iostream.h>
void main()
{
 int n = 44;
 int *ptr = &n;
 ++(*ptr);
 int *const cptr = &n;
 ++(*cptr);
 ++cptr;
 const int kn=88;
 const int *ptrc = &kn;
 ++(*ptrc);
 ++ptrc;
 const int *const cptrc =&kn;
 ++(*cptrc);
 ++cptrc;
}
```
- (d) Give the output of the following program segment (Assume all required header files are included in the program) **2**
- ```
void main()
{
    char *name,*name1;
    int l=0;
    name="Windows98";
```

```

        l = strlen(name);
        cout<<endl;
        for (int asc=90;asc>=65;asc--)
        {
            for(int i=0;i<l;i++)
            {
if (name[i]==char(asc) || (name[i]==char(asc+32)))
cout<<name[i];
            }
        }
        cout<<endl;
    }

```

- (e) Write the output of the following program: 2

```

#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) What will be the output of the following program: 2

```

Void main()
{ int b;
char bboy[10]; cout<<endl;
bboy[0]='s',bboy[1]='h',bboy[2]='r';
bboy[3]='u',bboy[4]='t',bboy[5]='i';
len(bboy);
}
void len(char boy[10])
{ int l;
l=strlen(boy); cout<<l;
for (int i=0;i<=l;i++)
{ char a = toupper(boy[i]);
cout<<a;
}
}

```

2. (a) How does inheritance influence the working of constructors and destructors? 2
- (b) Define a class BALANCED_MEAL in C++ with following description: 4

Private Members:

Access number	Integer
Name of Food	String of 25 characters
Calories	Integer
Food type	String

Cost
AssignAccess()

Float
Generates random numbers
between 0 to 99 and return it.

Public Members

- A function INTAKE() to allow the user to enter the values of Name of Food, Calories, Food type cost and call function AssignAccess() to assign Access number.
 - A function OUTPUT() to allow user to view the content of all the data members, if the Food type is fruit.
- (c) Consider the following declarations and answer the questions given below: 4

```
class Mydata
{
    protected:
        int data;
    public:
        void Get_mydata(int);
        void Manip_mydata(int);
        void Show_mydata(int);
        Mydata( );
        ~Mydata( );
};

class Personal_data
{
    protected:
        int data1;
    public:
        void Get_personaldata(int);
        void Show_personaldata(int);
        Mydata1( );
        ~Mydata1( );
};

class Person: public Mydata, Personal_data
{
    public:
        void Show_person(void);
        person( );
        ~person( );
};
```

- How many bytes will be required by an object belonging to class Person?
 - Which type of inheritance is depicted in the above example?
 - List the data members that can be accessed by the member function Show_person()
 - What is the order of constructor execution at the time of creating an object of class Person?
- (d) Answer the questions (i) and (ii) after going through the following class. 2

```
class Exam
{
    char Subject[20];
    int Marks;
    public:
        Exam() // Function 1
        {
            strcpy(Subject, "Computer");
        }
};
```

```

        Marks = 0 ; }
Exam(char P[ ]) // Function 2
{
    strcpy(Subject, P) ;
    Marks=0 ; }

Exam(int M) // Function 3
{
    strcpy(Subject,"Computer") ;
    Marks = M ; }
Exam(char P[ ], int M) // Function 4
{
    strcpy(Subject, P) ;
    Marks = M ; }
};

```

- (i) Which feature of the Object Oriented Programming is demonstrated using Function 1, Function2, Function 3 and Function 4 in the above class Exam?
- (ii.) Write statements in C++ that would execute Function 3 and Function 4 of class Exam.
- 3** (a) Write a function in C++ which accepts an integer array and its size as arguments/parameters and assigns the elements in to two dimensional array of integers in the following format: **4**
 If the array is **1,2,3,4,5,6** ,then the resultant 2D array should be :

```

1 2 3 4 5 6
1 2 3 4 0 0
1 2 3 0 0 0
1 2 0 0 0 0
1 0 0 0 0 0
1 0 0 0 0 0

```

- (b) Translate, following infix expression into its equivalent postfix expression $A * (B + D) / E - F - (G + H / K)$ **2**
- (c) If an array B[11][8] is stored as column wise and B[2][2] is stored at 1024 and B[3][3] at 1084. Find out the base address, size of an element and address of B[5][3]. **4**
- (d) Give the necessary declarations for a queue containing float type numbers; write a user defined function in C++ to insert a float type number in the queue. Use linked representation of queue. **4**
- (e) Write a function in C++ to print the sum of all the values which are divisible by 10 or 20 present in a two dimensional array passed as the argument to the function. **3**
- 4** (a) Assuming the given definition of class HOTELDATA, write functions in C++ to perform the following: **3**

```

class HOTELDATA
{
    int room;
    char name[20];
    int duration;
public:
    void checkins();
    void display(); };

```

Checkins() function to allow user to enter the data of customers (objects of class HOTELDATA) and write them to a binary file "HOTEL" and display() function allows us to read from the binary file and display on the screen.

- (b) Observe the program segment given below carefully, and answer the question that follows : 1

```
class Member
{
    int Member_no;
    char Member_name[20];
public :
    void enterdetails{ } ;
    void showdetails();
    int RMember_no() {return Member_no; }
};
void Update(Member NEW)
{
    fstream File;
    File.open("MEMBER.DAT",ios::binary|ios::in|ios::out);
    Member OM;
    int Recordsread = 0, Found = 0;
    while (!Found && File.read((char*)&OM, sizeof(OM)))
    {
        Recordsread ++;
        if (NEW.RMember_no() == OM.RMember_no())
        {
            _____//Missing Statement
            File.write((char*)&NEW, sizeof(NEW));
            Found = 1;
        }
        else
            File.write((char*)&OM, sizeof(OM));
    }
    if (!Found)
        cout<<"Record for modification does not exist";
    File.close();
}
```

If the function Update () is supposed to modify a record in file MEMBER.DAT with the values of Member NEW passed to its argument, write the appropriate statement for **Missing Statement** using seekp() or seekg(), whichever needed, in the above code that would write the modified record at its proper place.

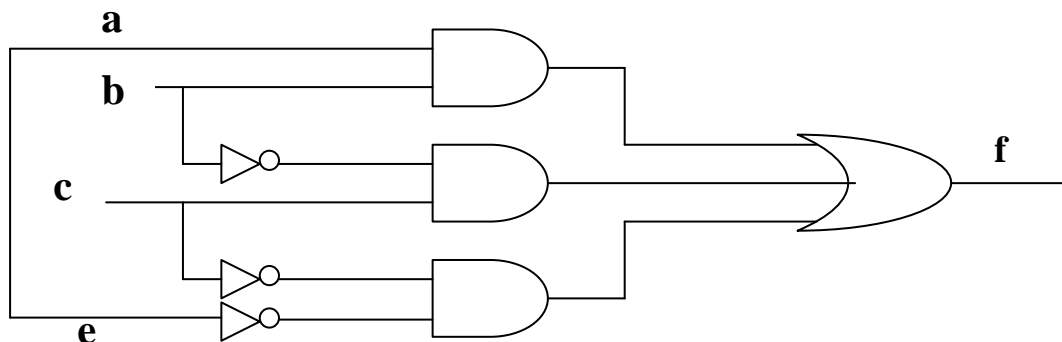
- (c) Write a user defined function in C++ to read the content from a text file "Mybook.txt", count and display the number of word "*the*" present in the file. 2

5. (a) What do you understand by the terms **Cardinality** and **Degree** of a relation in relational database? **2**
- (b) Given the following **LAB** table, write SQL command for the questions (i) to (iii) and give the output of (iv). **6**

LAB

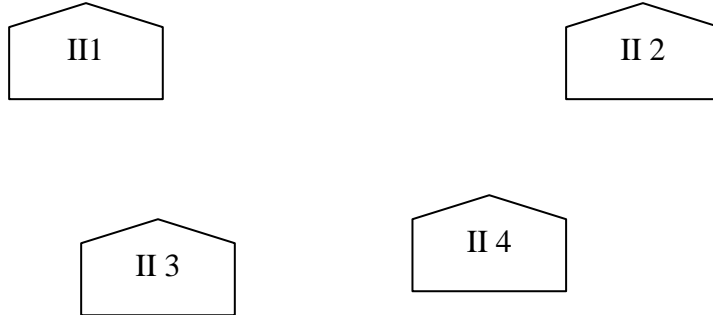
No	ItemName	CostPerItem	Quantity	Dateofpurchase	Warranty	Operational
1	Computer	60000	9	21/5/96	2	7
2	Printer	15000	3	21/5/97	4	2
3	Scanner	18000	1	29/8/98	3	1
4	Camera	21000	2	13/10/96	1	1
5	Switch	8000	1	31/10/99	2	1
6	UPS	5000	5	21/5/96	1	4
7	Router	25000	2	11/1/2000	2	5

- (i) To select the ItemName, which are within the Warranty period till present date.
- (ii) To display all the itemName whose name starts with "C".
- (iii) To list the ItemName in ascending order of the date of purchase where quantity is more than 3.
- (iv) Give the output of the following SQL commands:
- (a) select min(DISTINCT Quantity) from LAB;
- (b) select max(Warranty) from LAB;
- (c) select sum(CostPerItem) from Lab;
- 6 (a) State and verify De-Morgan's law in Boolean Algebra. **2**
- (b) Interpret the following logical circuit as Boolean expression. **2**



- (c) Reduce the following Boolean expression using K-map. **3**
- $$F(A, B, C, D) = \Sigma(0, 1, 2, 4, 5, 7, 8, 9, 10, 11, 14)$$
- (d) Prove that $XY + YZ + YZ' = Y$ **1**
- 7 (a) Explain function of hub and router. **1**
- (b) Expand the following terms: **2**
- (i) URL (ii) ISP (iii) DHTML (iv) CDMA
- (c) Differentiate between message switching and packet switching **1**

- (d) Indian Industries has the following four buildings in Chennai. Distance between various wings is given below:



Wing II 1 to Wing II 3	70m
Wing II 1 to Wing II 2	20m
Wing II 1 to Wing II 4	115m
Wing II 3 to Wing II 4	30m
Wing II 2 to Wing II 3	25m

Number of Computers

Wing II 1	35
Wing II 2	25
Wing II 3	80
Wing II 4	60

- i. Suggest suitable CABLE LAYOUTS FOR THESE BUILDINGS. 1
- ii. Name the wing where the Server is 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

OR