SAMPLE PAPER
Class - XII
SUBJECT – COMPUTER SCIENCE

Subject: **Computer Sc**.	Class: **XII**
Time: **3 Hours**	MM: **70**

1. (a) Differentiate between a global variable and a local variable. [1]

(b) Name the Header file(s) that shall be needed for successful compilation of the following C++ code? [2]

```
void main()
    {
        char st[20];
        gets(st);
        if(isaplha(st[0])
            cout<<"Starts with alphabet";
        else
            cout<<strlen(st);
    }
```

(c) Rewrite the following program after removing syntactical error(s) if any. Underline each correction. [2]

```
#include<iostream.h>
#define SIZE =10
VOID MAIN()
{
    int a[SIZE]={10,20,30,40,50};
    float x=2;
    SIZE=5;
    for(int i=0;i<SIZE;i++)
        cout<<a[i]%x;
}
```

(d) Find the output of the following program : [1]

i)
```
#include<iostream.h>
#include<string.h>
struct Student
{
    int rno;
    char name[20];
};
void main()
{
    student a[2]={1,"Amit",}{2,"Sumit"}};
    for(int i=0;i<2;i++)
    {
        cout<<"\n Rno"<<a[i].rno;
```

```
                cout<<"\n Name ";
                for(int j=0;j<strlen(a[i].name);j++)
                        cout<<a[i].name[i]<<" ";
        }
}
```

ii)
```
#include<iostream.h>
 int a=10;
void main()
{
        void demo(int &,int,int*);
        int a=20,b=5;
        demo(::a,a,&b);
                cout<<::a<<a<<b<<endl;
}
void demo(int &x, int y, int *z)
{
        a+=x;
        y*=a;
        *z=a+y;
        cout<<x<<y<<*z<<endl;
}
```
[1]

(e) In the following C++ program, what will be the maximum and minimum value of r generated with the help of random function? [1]

```
#include<iostream.h>
#include<stdlib.h>
void main()
{
        int r;
        randomize();
        r=random(20)+random(2);
        cout<<r;
}
```

(f) Answer the questions(i) and (ii) after going through the following class : [2]

```
class Exam
{
        int year;
        public :
                Exam(int y) { year=y; } //constructor 1
                Exam(Exam &t);          //constructor 2
}
```

(i) Create an object, such that it invokes constructor 1.

(ii) Write complete definition for constructor 2.

2. Define a class **Competition** in C++ with the following descriptions: [4]

Data Members:

Event_no	integer
Description	char(30)
Score	integer
qualified	char

Member functions:

- A constructor to assign initial values Event_No number as 101, Description as "State level", Score is 50 and qualified as 'N'.
- Input(), To take the input for event_no, description and score.
- Award(int), To award qualified as 'Y', if score is more than the cutoffscore passed as argument to the function else 'N'.
- Show(), To display all the details.

3. Answer the questions (i) to (iv) based on the following code :

```
class Employee
{
        int id;
        protected :
        char name[20];
        char doj[20];
        public :
        Employee();
        ~Employee();
        void get();
        void show();
};
class Daily_wager : protected Employee
{
        int wphour;
        protected :
        int nofhworked;
        public :
        void getd();
        void showd();
};
class Payment : private Daily_wager
{
        char date[10];
        protected :
```

```
        int amount;
        public :
        Payment();
        ~Payment();
        void show();
};
```

(i) Name the type of Inheritance depicted in the above example. [1/2]

(ii) Name the member functions, which are accessible by the objects of class Payment. [1]

(iii) From the following, Identify the member function(s) that can be called directly from the object of class Daily_wager class [1/2]
show(), getd(), get()

(iv) Find the memory size of object of class Daily_wager. [1/2]

(v) Is the constructors of class Employee will copied in class Payment? Due to inheritance. [1/2]

4. (a) Write a function in C++ which accepts a character array and its size as arguments and reverse that array without using second array and library function. [3]
Example : if the array is having: "Computer Science"
Then after reversal it should rearranged as: "ecneicS retupmoC"
OR
WAF that accept an array of 10 integers with size. The function fins a particular number from the array by using the binary search method

(b) An array A[-2..8][-2..5] is stored in the memory along the column with each element occupying 4 bytes. Find out the address of the element A[3][2]. [2]

(c) Write a function in C++ to delete a node containing names of student, from a dynamically allocated stack of names. The function receives the value of top by reference. The stack is implemented with the help of following structure : [2]

```
struct student
{
        char name[20];
        student *next;
};
```

(d) Write a function to insert a set of integer values in a circular queue and display them. [2]

(e) Evaluate the following postfix expression using a stack and show the contents of stack after execution of each operation: [2]

False, True , False , True ,Not, Or, True , Or, Or ,And
(Hint: Consider the each 'Not', 'Or', 'And' as operators and 'False' and 'True' are

operands)

(f) Find the post fix expression from the given infix expression:
(A+B-(C*D)+F*G*H+M) [2]

5. a) Assuming a binary file "FUN.DAT" is containing objects belonging to a class LAUGHTER (as defined below). Write a user defined function in C++ to add more objects belonging to class LAUGHTER at the bottom of it. [3]

```
Class  LAUGHTER
 {
            int   idno;
            char  Type[5];
            char Desc[255];
  PUBLIC:
        void  Newentry()
{    cin>> Idno; gets(Type); gets(Desc);}
        void Showonscreen()
{  cout<<Idno<<" "<<Type<<endll<<Desc<<endl;}
 };
```

b) Define the various file opening methods in c++ program. [2]

(c)WAF in c++ to store a set of price values with the item names in a file " item-record.dat". [3]

6. (a)Write SQL commands for (a) to (j) and write output for (h) on the basis of ***Teacher*** relation given below. [7]

No	Name	Age	Department	Date of Join	Salary	Sex
1.	jigal	34	Computer	10/01/97	12000	M
2.	Sharmila	31	History	24/03/98	20000	F
3.	Sandeep	32	Maths	12/12/96	30000	M
4.	Sangeeta	35	History	01/07/99	40000	F
5.	Rakesh	42	Maths	05/09/97	25000	M
6.	Shyam	50	History	27/02/97	30000	M
7.	Shiv Om	44	Computer	25/02/97	21000	M
8.	Shalakha	33	Maths	31/07/97	20000	F

I. To show all information about the teacher of history department.
II. To list the names of female teachers who are in Maths department
III. To list names of all teachers with their date of joining in ascending order.
IV. To count the number of teachers with age<35.
V. To insert a new row in the TEACHER table with the following data:

9,"Raja",26,"Computer",'13/05/95',2300,"M".

VI. To count the number of teachers having salary >=12000, with each department.

VII. Give the output of following statement.

(i) Select COUNT(distinct department) from TEACHER.

(ii) Select name, MAX(Age) from Teacher where sex="F"

(b) Define the following terms in Database: [2]

(1) Set Difference

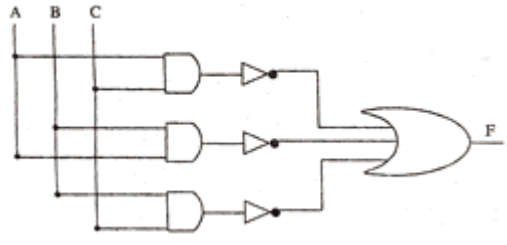
(2) Foreign Key

(c) (i) What is a View? Write syntax to create a view from a table. [1]

(ii) Differentiate between DDL and DML commands. [1]

7. (a) State and verify Demorgan's Laws [2]

(b)Write the equivalent Boolean expression for the following Circuit [1]



(c) For the given truth table, give canonical sum-of-products(SOP) and canonical product-of- sum (POS) expression [2]

X	**Y**	**Z**	**F o/p**
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

(d) If **F(a,b,c,d)= Σ (1,3,4,5,7,9,11,12,13,15)** obtain the simplified form using K-Map. [2]

(e) Write the principal of Duality and write the dual of the Boolean Expression: [1]

(B` + C) + A`

(f) Draw the Circuit for Boolean expression **(X+Y)(Y+Z)(X+Z)** with [1]

help of NOR gate only.

8. (a) Write the different type of Topologies with one advantage and one disadvantage. [3]

(b) Define Circuit Switching and Packet Switching [2]

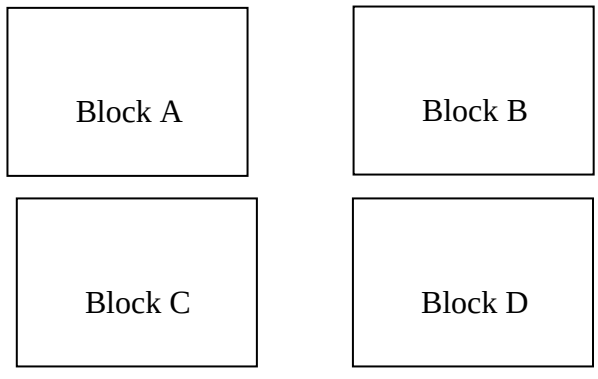
(c) Give one advantage and one disadvantage of optical fiber and coaxial cable used in communication. [1]

(d) Explain the following terms [2]

(1) Video Conferencing

(2) TCP\IP

(e) Knowledge Supplement Organization has set up its new center at Mangalore for its office and web based activities. It has 4 blocks of buildings as shown in the diagram below.



The distances between the building are as :

Block A to Block C- 120 meters
Block A to Block B- 20 meters
Block A to Block D- 550 meters
Block B to Block D- 80 meters
Block D to Block C- 110 meters
Block B to Block C- 280 meters

The number of computers in each Block are as follows:

Block A - 120
Block B - 180
Block C - 20
Block D - 110

(i) Suggest a cable layout of connections between the blocks and [1]

type of cable.

(ii) Suggest the most suitable place (i.e. block) to house the server of this organization with a suitable reason. [1]

(iii) Suggest the placement of the following devices with justification. [1]

(a) Repeater

(b) Hub/Switch

(iv) The organization is planning to link its front office situated in the city in a Hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed. [1]