SAMPLE PAPER – SET II
COMPUTER SCIENCE [CODE–083]
CLASS – XII

Max Time : 3 hours **Max Marks : 70**

1. (a) What is the difference between Actual Parameter and Formal Parameters? Also, give a suitable C++ code to illustrate both 2

   (b) Write the names of the header files to which the following belong: 1
   (i) exp() (ii) strcmpi()

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

```
#include <iostream.h>
struct Pixels
{ int Color,Style;}
void ShowPoint(Pixels P)
{ cout<<P.Color,P.Style<<endl;}
void main()
{
    Pixels Point1=(5,3);
    ShowPoint(Point1);
    Pixels Point2=Point1;
    Color.Point1+=2;
    ShowPoint(Point2);
}
```

   (d) Find the output of the following program: 3

```
#include <iostream.h>
void Changethecontent(int Arr[], int Count)
    {
        for (int C=1;C<Count;C++)
            Arr[C-1]+=Arr[C];
    }
    void main()
    {
        int A[]={3,4,5},B[]={10,20,30,40},C[]={900,1200};
        Changethecontent(A,3);
        Changethecontent(B,4);
        Changethecontent(C,2);
        for (int L=0;L<3;L++) cout<<A[L]<<'#';
```

```
        cout<<endl;
        for (L=0;L<4;L++) cout<<B[L] <<'#';
        cout<<endl;
        for (L=0;L<2;L++) cout<<C[L] <<'#';
    }
```

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

```
#include <iostream.h>
struct Game
{
    char Magic[20];int Score;
};
void main()
{
    Game M={"Tiger",500};
    char *Choice;
    Choice=M.Magic;
    Choice[4]='P';
    Choice[2]='L';
    M.Score+=50;
    cout<<M.Magic<<M.Score<<endl;
    Game N=M;
    N.Magic[0]='A';N.Magic[3]='J';
    N.Score-=120;
    cout<<N.Magic<<N.Score<<endl;
}
```

(f) In the following program, if the value of N given by the user is 20, what maximum and minimum values the program could possibly display? 2

```
#include <iostream.h>
#include <stdlib.h>
void main()
{
    int N,Guessnum;
    randomize();
    cin>>N;
    Guessnum=random(N-10)+10;
    cout<<Guessnum<<endl;
}
```

2. (a) What do you understand by Polymorphism? Give a suitable example of the same. 2

(b) Answer the questions (i) and (ii) after going through the following program: 2

```
class Match
```

```
{
    int Time;
public:
Match()                         //Function 1
{
    Time=0;
    cout<<"Match commences"<<end1;
}
void Details()                  //Function 2
{
    cout<<"Inter Section Basketball Match"<<end1;
}
Match(int Duration)             //Function 3
{
    Time=Duration;
    cout<<"Another Match begins now"<<end1;
}
Match(Match &M) //Function 4
{
    Time=M.Duration;
    cout<<"Like Previous Match "<<end1;
}
};
```

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

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

(c) Define a class in C++ with following description: 4

Private Members

- A data member Flight number 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 Flight Number, Destina

tion, 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) Answer the questions (i) to (iv) based on the following: 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 Sales_Entry();
    void Sales_Detail();
};
```

(i) Write the names of data members which are accessible from objects belonging to class CUSTOMER.

(ii) Write the names of all the member functions which are accessible from objects belonging to class SALESMAN.

(iii) Write the names of all the members which are accessible from member functions of class SHOP.

(iv) How many bytes will be required by an object belonging to class SHOP?

3 (a) Write a function in C++ to combine the contents of two equi-sized arrays A and B by adding their corresponding elements as the formula A[i]+B[i]; where value i varies from 0 to N-1 and transfer the resultant content in the third same sized array C. 3

(b) An array P[20][30] is stored in the memory along the column with each of the element occupying 4 bytes, find out the Base Address of the array, if an element P[2][20] is stored at the memory location 5000. 3

(c) Write a function in C++ to perform Push operation on a dynamically allocated Stack containing real numbers. 4

(d) Write a function in C++ to find sum of each row for a two dimensional integer array having 3 rows and 4 columns which is passed as parameter of the function. 2

(e) Evaluate the following postfix notation of expression showing the stack contents for each step of evaluation: 2

True, False, AND, True, True, NOT, OR, AND

4. (a) Observe the program segment given below carefully and answer the questions that follow: fill the blanks marked as Statement 1 and Statement 2 using seekg() and tellg() functions for performing the required task. 1

```
#include <fstream.h>
class Employee
{
    int Eno;char Ename[20];
public:
    void Input() {cin>>Eno; cin.getline(Ename,20); }
    void Display() {cout<<Eno<<"#"<<Ename<<endl; }
};
int Countrec()
{
    fstream File;
    Employee E;
    File.open("EMP.DAT",ios::binary|ios::in);
    _____ //Statement 1
    int Bytes = _____ //Statement 2
    int Count = Bytes / size of (Item);
    File.close();
    return Count;
}
```

(i) Write statement 1 to position the file pointer to the end of the file.

(ii) Write statement 2 to return the number of bytes from the beginning of the file to the current position of the file pointer.

(b) Write a function in C++ to count the number of alphabets present in a text file "NOTES.TXT". 2

(c) Write a function in C++ to add new objects at the bottom of a binary file "STUDENT.DAT", assuming the binary file is containing the objects of the following class. 3

```
class STUD
{
    int Rno;
    char Name[20];
public:
    void Enter(){cin>>Rno;gets(Name);}
    void Display(){cout<<Rno<<Name<<endl;}
};
```

5. (a) What do you understand by the Union and Cartesian Product operations performed upon two relations? 2

Consider the following tables GAMES and PLAYER and answer (b) and (c) parts of this question:

Table: GAMES

GCode	GameName	Type	Number	PrizeMoney	Schedule Date
101	Carom Board	Indoor	2	5000	23-Jan-2004
102	Badminton	Outdoor	2	12000	12-Dec-2003
103	Table Tennis	Indoor	4	8000	14-Feb-2004
105	Chess	Indoor	2	9000	01-Jan-2004
108	Lawn Tennis	Outdoor	4	25000	19-Mar-2004

Table: PLAYER

PCode	Name	Gcode
1	Nabi Ahmad	101
2	Ravi Sahai	108
3	Jatin	101
4	Nazneen	103

(b) Write SQL commands for the flowing statements: 4

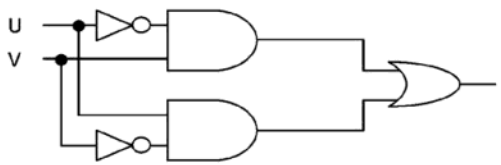
(i) To display the name of all GAMES with their GCodes

(ii) To display details of those GAMES which are having PrizeMoney more than 7000.

(iii) To display the content of the GAMES table in ascending order of ScheduleDate.
(iv) To display sum of PrizeMoney for each Type of GAMES

(c) Give the output of the following SQL queries: 2
(i) SELECT COUNT(DISTINCT Number) FROM GAMES;
(ii)SELECT MAX(ScheduleDate),MIN(ScheduleDate) FROM GAMES;
(ii) SELECT Name, GameName FROM GAMES G, PLAYER P
WHERE G.Gcode=P.Gcode AND G.PrizeMoney>10000;
(iv) SELECT DISTINCT Gcode FROM PLAYER;

6. (a) State and algebraically verify Absorption Laws. 2
(b) Write the equivalent Boolean Expression for the following Logic Circuit 2

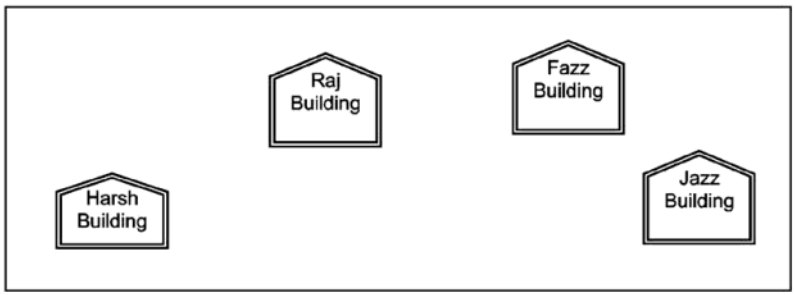


(c) Write the SOP form of a Boolean function G, which is represented in a truth table as follows: 1

P	Q	R	G
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

(d) Reduce the following Boolean Expression using K-Map: 3
$F(U,V,W,Z)=\pi(0,1,2,4,5,6,8,10)$

7. a) Define the term Bandwidth. Give any one unit of Bandwidth. 1
b) When do you prefer XML over HTML and why? 1
c) How firewall protect our Network? 1
d) What is the importance of URL in networking? 1
e) Ravya Industries has set up its new center at Kaka Nagar for its office and web based activities. The company compound has 4 buildings as shown in the diagram below: 4



Center to center distances between various buildings is as follows:

Harsh Building to Raj Building	50 m
Raj Building to Fazz Building	60 m
Fazz Building to Jazz Building	25 m
Jazz Building to Harsh Building	170 m
Harsh Building to Fazz Building	125 m
Raj Building to Jazz Building	90 m

Number of Computers in each of the buildings is follows:	
Harsh Building	15
Raj Building	150
Fazz Building	15
Jazz Bulding	25

e1) Suggest a cable layout of connections between the buildings.

e2) Suggest the most suitable place (i.e. building) to house the server of this organisation with a suitable reason.

e3) Suggest the placement of the following devices with justification:

(i) Internet Connecting Device/Modem

(ii) Switch

e4) The organisation is planning to link its sale counter situated in various parts of the same city, which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

f) Compare freeware and Shareware. 1

g) How Trojan Horses are different from Worms? Mention any one difference. 1

SAMPLE PAPER – SET II
MARKING SCHEME
COMPUTER SCIENCE [CODE–083]
CLASS – XII

Max Time : 3 hours **Max Marks : 70**

1. (a) What is the difference between Actual Parameter and Formal Parameters? Also, give a suitable C++ code to illustrate both. 2

Answer:

Actual Parameter	Formal Parameter
It is a parameter, which is used in function call to send the value from calling environment	It is a parameter, which is used in function header, to receive the value from actual parameter

```
#include <iostream.h>
void Calc(int T)                    //T is formal parameter
{
    cout<<5*T;
}
void main()
{
    int A=45;
    Calc(A); //A is actual parameter
}
```

(1 Mark for stating the difference)
(1 Mark for the suitable example)

OR

(Full 2 Mark for explanation of differences with the help of an example)
(1 Mark for the example)

(b) Write the names of the header files to which the following belong: 1

(i) exp() (ii) strcmpi()

Answer:

(i) math.h	(ii) string.h

(½ Mark for mentioning each correct header filename)

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

```
#include <iostream.h>
struct Pixels
{ int Color,Style;}
void ShowPoint(Pixels P)
{ cout<<P.Color,P.Style<<endl;}
void main()
{
    Pixels Point1=(5,3);
    ShowPoint(Point1);
    Pixels Point2=Point1;
    Color.Point1+=2;
    ShowPoint(Point2);
}
```

Answer:

```
#include <iostream.h>
struct Pixels
{ int Color,Style;};
void ShowPoint(Pixels P)
{ cout<<P.Color<<P.Style<<endl;}
void main()
{
    Pixels Point1={5,3};
    ShowPoint(Point1);
    Pixels Point2=Point1;
    Point1.Color+=2;
    ShowPoint(Point2);
}
```

(½ Mark for each correction)

(d) Find the output of the following program: 3

```
#include <iostream.h>
void Changethecontent(int Arr[], int Count)
{
    for (int C=1;C<Count;C++)
            Arr[C-1]+=Arr[C];
}
void main()
{
    int A[]={3,4,5},B[]={10,20,30,40},C[]={900,1200};
    Changethecontent(A,3);
    Changethecontent(B,4);
```

```
    Changethecontent(C,2);
    for (int L=0;L<3;L++) cout<<A[L]<<'#';
    cout<<endl;
    for (L=0;L<4;L++) cout<<B[L] <<'#';
    cout<<endl;
    for (L=0;L<2;L++) cout<<C[L] <<'#';
}
```

Answer:

```
7#9#5#
30#50#70#40#
2100#1200
```

(1 Mark for each correct line of output)

Note:

Deduct ½ Mark if any/all endl is/are not considered at correct place(s)

Deduct ½ Mark if any/all of the # symbol(s) is/are missing

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

```
#include <iostream.h>
struct Game
{
    char Magic[20];int Score;
};
void main()
{
    Game M={"Tiger",500};
    char *Choice;
    Choice=M.Magic;
    Choice[4]='P';
    Choice[2]='L';
    M.Score+=50;
    cout<<M.Magic<<M.Score<<endl;
    Game N=M;
    N.Magic[0]='A';N.Magic[3]='J';
    N.Score-=120;
    cout<<N.Magic<<N.Score<<endl;
}
```

Answer:

```
TiLeP550
AiLJP430
```

(1 Mark for each correct line of output)

Note:

Deduct ½ Mark if any/all endl is/are not considered at correct place(s)

Deduct ½ Mark if any/all of the : symbol(s) is/are missing

(f) In the following program, if the value of N given by the user is 20, what maximum and minimum values the program could possibly display? 2

```
#include <iostream.h>
#include <stdlib.h>
void main()
{
    int N,Guessnum;
    randomize();
    cin>>N;
    Guessnum=random(N-10)+10;
    cout<<Guessnum<<endl;
}
```

Answer:

Maximum value =19 , Minimum value = 10

(1 Mark each for correct minimum and maximum values)

2. (a) What do you understand by Polymorphism? Give a suitable example of the same. 2

Answer:

Polymorphism: It is a method of using the same operator or function (method) to work using different set of inputs. Function overloading is one of the examples of polymorphism, where more than one function carrying same name behave differently with different set of parameters passed to them.

```
void Display()
{
    cout<<"Hello!"<<endl;
}
    void Display(int N)
{
    cout<<2*N+5<<endl;
}
```

(1 Mark for appropriate definition)

(1 Mark for appropriate example)

(b) Answer the questions (i) and (ii) after going through the following program: 2

```
class Match
{
    int Time;
public:
Match()          //Function 1
```

```
{
Time=0;
cout<<"Match commences"<<end1;
}
void Details() //Function 2
{
    cout<<"Inter Section Basketball Match"<<end1;
}
Match(int Duration)              //Function 3
{
    Time=Duration;
    cout<<"Another Match begins now"<<end1;
}
Match(Match &M) //Function 4
{
    Time=M.Duration;
    cout<<"Like Previous Match "<<end1;
}
};
```

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

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

i)

Answer:

Copy constructor, It will help to copy the data from one object to another.

(½ Mark for mentioning copy constructor)

(½ Mark for explaining the purpose)

ii)

Answer:

```
Match M; //Function 1
Match N(10); //Function 3
```

(½ Mark for each statement)

(c) Define a class in C++ with following description: 4

Private Members

- A data member Flight number 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 Flight Number, 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

Answer:

```
class FLIGHT
{
    int Fno;
    char Destination[20];
    float Distance, Fuel;
    void CALFUEL();
public:
    void FEEDINFO();
void SHOWINFO();
};
void FLIGHT::CALFUEL()
{
    if (Distance<=1000)
    Fuel=500;
else
    if (Distance<=2000)
    Fuel=1100;
else
Fuel=2200;
}
void FLIGHT::FEEDINFO()
{
    cout<<"Flight No :";cin>>Fno;
    cout<<"Destination :";gets(Destination);
    cout<<"Distance :";cin>>Distance;
    CALFUEL();
}
void FLIGHT::SHOWINFO()
{
    cout<<"Flight No :"<<Fno<<endl;
    cout<<"Destination :"<<Destination<<endl;
    cout<<"Distance :"<<Distance<<endl;
```

```
cout<<"Fuel :"<<Fuel<<endl;
}
```

(½ Mark for correct syntax for class header)
(½ Mark for correct declarations of data members)
(1 Mark for appropriate definition of function CALFUEL())
(1 Mark for appropriate definition of FEEDINFO() with a call for function CALFUEL())
(1 Mark for appropriate definition of SHOWINFO())

(d) Answer the questions (i) to (iv) based on the following: 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 Sales_Entry();
    void Sales_Detail();
};
```

(i) Write the names of data members which are accessible from objects belonging to class CUSTOMER.

Answer:

None of the data members are accessible from objects belonging to class CUSTOMER.

(1 Mark for correct answer)

(ii) Write the names of all the member functions which are accessible from objects belonging to class SALESMAN.

Answer:

Enter(), Show()

(1 Mark for correct answer)

Note:

No marks to be awarded for any other alternative answer

(iii) Write the names of all the members which are accessible from member functions of class SHOP.

Answer:

Data members: Voucher_No, Sales_Date, Salary Member function: Sales_Entry(),Sales_Detail(),Enter(),Show(),Register(),Status()

(1 Mark for correct answer)

(iv) How many bytes will be required by an object belonging to class SHOP?

Answer:

66 bytes

(1 Mark for correct answer)

3. (a) Write a function in C++ to combine the contents of two equi-sized arrays A and B by adding their corresponding elements as the formula A[i]+B[i]; where value i varies from 0 to N-1 and transfer the resultant content in the third same sized array C. 3

Answer:

```
void AddNSave(int A[ ],int B[ ],int C[ ],int N)
{
for (int i=0;i<N;i++)
C[i]=A[i]+B[i];
}
```

(1 Mark for correct Function Header with appropriate parameters)

(1 Mark for appropriate loop)

(1 Mark for correct expression for addition of corresponding elements)

(i) An array P[20][30] is stored in the memory along the column with each of the

element occupying 4 bytes, find out the Base Address of the array, if an element P[2][20] is stored at the memory location 5000. 3

Answer:

Given,
W=4
N=20
M=30
Loc(P[2][20])=5000
Column Major Formula:
Loc(P[I][J]) =Base(P)+W*(N*J+I)
Loc(P[2][20]) =Base(P)+4*(20*20+2)
Base(P) =5000 -4*(400+2)
=5000-1608
=3392

(1 Mark for writing correct formula (for column major) OR substituting formula with correct values)
(1 Mark for writing calculation step – at least one step)
(1 Mark for correct address)

(ii) Write a function in C++ to perform Push operation on a dynamically allocated stack containing real numbers. 4

Answer:

```
struct NODE
{
    float Data; NODE *Link;
};
class STACK
{
    NODE *Top;
    public:
    STACK();
    void Push();
    void Pop();
    void Display();
    ~STACK();
};
void STACK::Push()
{
```

```
    NODE *Temp;
    Temp=new NODE;
    cin>>Temp->Data;
    Temp->Link=Top;
Top=Temp;
}
```

(1 Mark for declaring Temp pointer)
(1 Mark for creating a new node and assigning/entering appropriate values in it)
(1 Mark for connecting link part of new node to top)
(1 Mark for assigning Top as the new node i.e. Temp)

(iii) Write a function in C++ to find sum of each row for a two dimensional integer array having 3 rows and 4 columns which is passed as parameter of the function. 2

Answer:

```
void MatAdd(int M[][4],int N,int M)
{
    for (int R=0;R<N;R++)
{
    int SumR=0;
    for (int C=0;C<M;C++)
    SumR+=M[R][C];
    cout<<SumR<<endl;
}
}
```

(½ Mark for correct function header)
(½ Mark for appropriate outer loop)
(½ Mark for appropriate inner loop)
(½ Mark for correctly initializing SumR and calculating the sum)

(iv) Evaluate the following postfix notation of expression showing the stack contents for each step of evaluation: 2

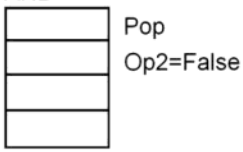
True, False, AND, True, True, NOT, OR, AND

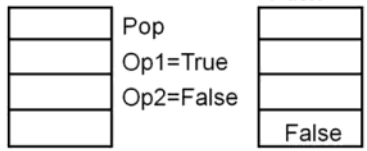
Answer:

Step 1: Push

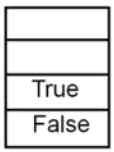
Step 2: Push

Step 3: AND

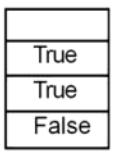




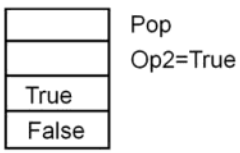
Step 4: Push



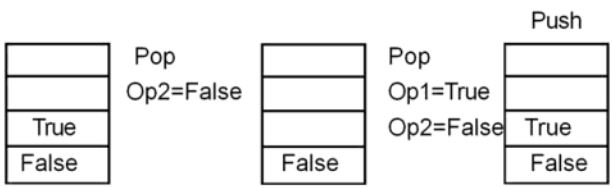
Step 5: Push



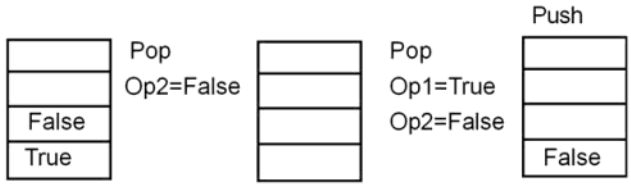
Step 6: NOT



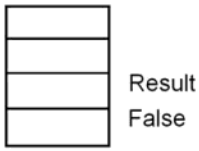
Step 7: OR



Step 8: AND



Step 9: Pop



(½ Mark for correctly evaluating each operator)

4. (a) Observe the program segment given below carefully and answer the questions that follow: fill the blanks marked as Statement 1 and Statement 2 using seekg() and tellg() functions for performing the required task. 1

```
#include <fstream.h>
class Employee
{
    int Eno;char Ename[20];
public:
    void Input() {cin>>Eno; cin.getline(Ename,20); }
    void Display() {cout<<Eno<<"#"<<Ename<<endl; }
};
int Countrec()
{
    fstream File;
    Employee E;
    File.open("EMP.DAT",ios::binary|ios::in);
    _____//Statement 1
    int Bytes = _____//Statement 2
    int Count = Bytes / sizeof(Item);
    File.close();
    return Count;
}
```

(i) Write statement 1 to position the file pointer to the end of the file.

(ii) Write statement 2 to return the number of bytes from the beginning of the file to the current position of the file pointer.

Answer:

```
(i) File.seekg(0,ios::end); //Statement 1
(ii) File.tellg(); //Statement 2
```

(½ Mark for each correct Statement)

(b) Write a function in C++ to count the number of alphabets present in a text file "NOTES.TXT". 2

Answer:

```
void CountAlphabet()
{
    ifstream FIL("NOTES.TXT");
    int CALPHA=0;
    char CH=FIL.get();
    while (!FIL.eof())
    {
            if (isalpha(CH))
            CALPHA++;
            CH=FIL.get();
    }
    cout<<"No. of Alphabets:"<<CALPHA<<endl;
}
```

(½ Mark for opening NOTES.TXT correctly)
(½ Mark for initializing the counter and incrementing the counter)
(½ Mark for correctly reading a character from the file)
(½ Mark for checking for the alphabet)

(c) Write a function in C++ to add new objects at the bottom of a binary file "STUDENT.DAT", assuming the binary file is containing the objects of the following class. 3

```
class STUD
{
    int Rno;
    char Name[20];
public:
    void Enter(){cin>>Rno;gets(Name);}
    void Display(){cout<<Rno<<Name<<endl;}
};
```

Answer:

```
void Addnew()
{
        fstream FIL;
        FIL.open("STUDENT.DAT",ios::binary|ios::app);
        STUD S;
        char CH;
        do
   {
        S.Enter();
        FIL.write((char*)&S,sizeof(S));
        cout<<"More(Y/N)?";cin>>CH;
        }while(CH!='Y');
        FIL.close();
}
```

(½ Mark for opening STUDENT.DAT correctly)
(½ Mark for user input for the new object)
(1 Mark for appropriate loop)
(1 Mark for writing the record on to the binary file)

5. (a) What do you understand by the Union and Cartesian Product operations performed upon two relations? 2

Answer:

The relational operator Union (U) can be applied to two relations if their degree (attributes) is same. The resultant relation consists of the tuples of both the relations. However the duplicate tuples are eliminated.
If two relations do not have common attribute names then the relations are called Product compatible. The resultant relation is in fact a concatenation of each tuple of A with each tuple of B.

(1 Mark each for the explanation of both the concepts)

Consider the following tables GAMES and PLAYER and answer (b) and (c) parts of this question:

Table: GAMES

GCode	GameName	Type	Number	PrizeMoney	ScheduleDate
101	Carom Board	Indoor	2	5000	23-Jan-2004
102	Badminton	Outdoor	2	12000	12-Dec-2003
103	Table Tennis	Indoor	4	8000	14-Feb-2004
105	Chess	Indoor	2	9000	01-Jan-2004
108	Lawn Tennis	Outdoor	4	25000	19-Mar-2004

Table: PLAYER

PCode	Name	Gcode
1	Nabi Ahmad	101
2	Ravi Sahai	108
3	Jatin	101
4	Nazneen	103

(b) Write SQL commands for the flowing statements: 4

(i) To display the name of all GAMES with their GCodes

Answer:

```
SELECT GameName,Gcode FROM GAMES;
```

(1 Mark for correct query)

OR

(½ Mark for partially correct answer)

(ii) To display details of those GAMES which are having PrizeMoney more than 7000.

Answer:

```
SELECT * FROM Games WHERE Prizemoney>7000;
```

(1 Mark for correct query)

OR

(½ Mark for partially correct answer)

(iii) To display the content of the GAMES table in ascending order of ScheduleDate.

Answer:

```
SELECT * FROM Games ORDER BY ScheduleDate;
```

(1 Mark for correct query)

OR

(½ Mark for partially correct answer)

(v) To display sum of PrizeMoney for each Type of GAMES

Answer:

```
SELECT SUM(Prizemoney),Type FROM Games GROUP BY Type;
```

(1 Mark for correct query)

OR

(½ Mark for partially correct answer)

(c) Give the output of the following SQL queries: 2

(i) SELECT COUNT(DISTINCT Number) FROM GAMES;

Answer:2

(½ Mark for correct output)

(ii) SELECT MAX(ScheduleDate),MIN(ScheduleDate) FROM GAMES;

Answer:

MAX(ScheduleDate)	MIN(ScheduleDate)
19-Mar-2004	12-Dec-2003

(½ Mark for correct output)

(iii) SELECT Name, GameName FROM GAMES G, PLAYER P WHERE G.Gcode=P.Gcode AND G.PrizeMoney>10000;

Answer:

Ravi Sahai	Lawn Tennis

(½ Mark for correct output)

(iv) SELECT DISTINCT Gcode FROM PLAYER;

Answer:

101
108
103

(½ Mark for correct output)

6. (a) State and algebraically verify Absorption Laws. 2

Answer:

For every X,Y ∈ B

(i) X+X.Y = X

(ii) X + X'.Y = X + Y

Verification:

(i) X + X.Y = X

L.H.S. = X + X.Y

= X.1 + X.Y

=X.(1+Y)

=X.1

=X

=R.H.S.

(ii) X + X'.Y = X + Y

L.H.S. = X + X'.Y

= (X + X').(X + Y)

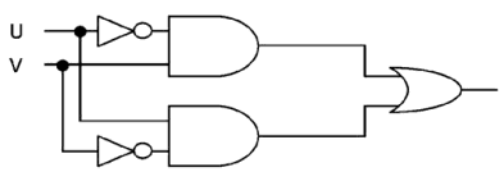
= 1. (X + Y)

= X + Y

= R.H.S.

(1 Mark for stating the Absorption Laws)

(1 Mark for verifying the laws)



(b) Write the equivalent Boolean Expression for the following Logic Circuit 2

Answer:

F(U,V)=(U'.V) + (U.V')

(2 Marks for the final expression)

OR

(1 Mark for any one of the correct terms out of U'V or UV')

(i) Write the SOP form of a Boolean function G, which is represented in a truth table as follows: 1

P	Q	R	G
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

Answer:

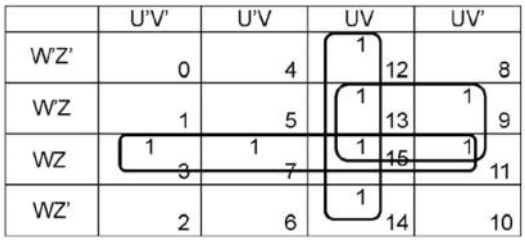
F(P,Q,R) = P.'Q.'R.' + P.Q'R' + P.Q.R' + P.Q.R

(1 Mark for the correct SOP expression)

(ii) Reduce the following Boolean Expression using K-Map: 3

F(U,V,W,Z)= π (0,1,2,4,5,6,8,10)

Answer:



F(U,V,W,Z)=U.V + W.Z + U.Z

(½ Mark for placing all 1s at correct positions in K-Map)

(½ Mark for each grouping)

(1 Mark for writing final expression in reduced/minimal form)

Note: Deduct ½ mark if wrong variable names are used

7. a) Define the term Bandwidth. Give any one unit of Bandwidth. 1

Answer:

Bandwidth is referred to the volume of information per unit of time that a transmission medium (like an Internet connection) can handle.

OR

The amount of data that can be transmitted in a fixed amount of time is known as bandwidth.

For digital devices, the bandwidth is usually expressed in bits per second(bps) or

bytes per second. For analog devices, the bandwidth is expressed in cycles per second, or Hertz (Hz).

(1 Mark for correct definition)

(1 Mark for any one correct unit)

b) When do you prefer XML over HTML and why? 1

Answer:

The first benefit of XML is that because you are writing your own markup language, you are not restricted to a limited set of tags defined by proprietary vendors.

Rather than waiting for standards bodies to adopt tag set enhancements (a process which can take quite some time), or for browser companies to adopt each other's standards (yeah right!), with XML, you can create your own set of tags at your own pace.

(1 Mark for appropriate explanation)

c) How firewall protects our Network? 1

Answer:

A firewall is a part of a computer system or network that is designed to block unauthorized access while permitting authorized communications. It is a device or set of devices configured to permit, deny, encrypt, decrypt, or proxy all (in and out) computer traffic between different security domains based upon a set of rules and other criteria.

(1 Mark for appropriate explanation)

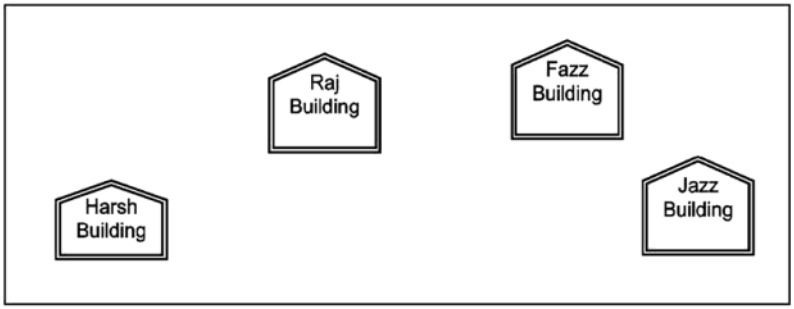
d) What is the importance of URL in networking? 1

Answer:

A Uniform Resource Locator (URL) is used to specify, where an identified resource is available in the network and the mechanism for retrieving it. A URL is also referred to as a Web address.

(1 Mark for appropriate explanation)

e) Ravya Industries has set up its new center at Kaka Nagar for its office and web based activities. The company compound has 4 buildings as shown in the diagram below: 4



Center to center distances between various buildings is as follows:

Harsh Building to Raj Building	50 m
Raj Building to Fazz Building	60 m
Fazz Building to Jazz Building	25 m
Jazz Building to Harsh Building	170 m
Harsh Building to Fazz Building	125 m
Raj Building to Jazz Building	90 m

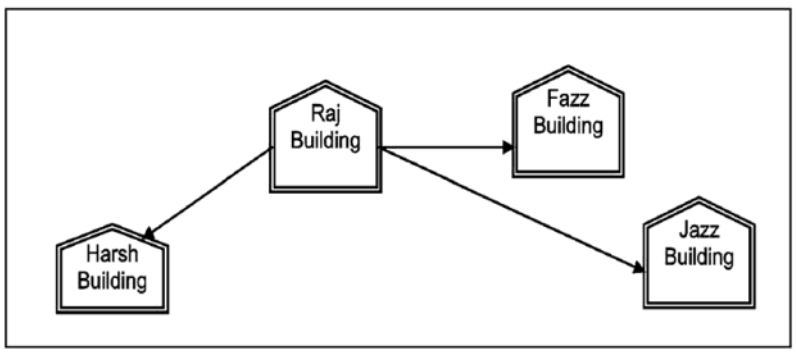
Number of Computers in each of the buildings is follows:

Harsh Building	15
Raj Building	150
Fazz Building	15
Jazz Bulding	25

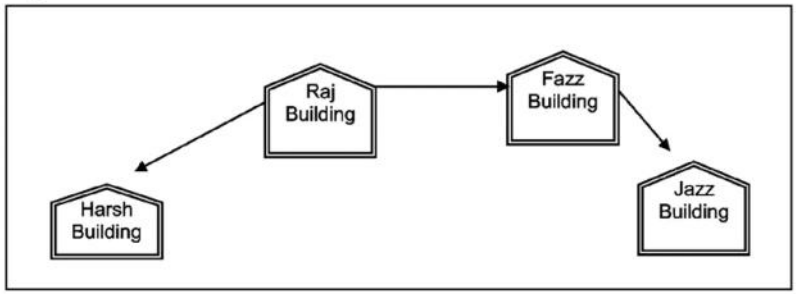
e1) Suggest a cable layout of connections between the buildings.

Answer: (Any of the following option)

Layout 1



Layout 2



(1 Mark for showing any of the above suitable cable layout)

e2) Suggest the most suitable place (i.e. building) to house the server of this organisation with a suitable reason.

Answer:

The most suitable place / block to house the server of this organisation would be Raj Building, as this block contains the maximum number of computers, thus decreasing the cabling cost for most of the computers as well as increasing the efficiency of the maximum computers in the network.

(½ Mark for suggesting suitable place and ½ for appropriate reason)

e3) Suggest the placement of the following devices with justification:
(i) Internet Connecting Device/Modem
(ii) Switch

Answer:

(i) Raj Building since it contains largest number of computers.
(ii) In both the layouts, a hub/switch each would be needed in all the buildings, to interconnect the group of cables from the different computers in each block

(½ Mark each for suggesting suitable place for connecting the two devices)

e4) The organisation is planning to link its sale counter situated in various parts of the same city, which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

Answer:

The type of network that shall be formed to link the sale counters situated in various parts of the same city would be a MAN, because MAN (Metropolitan Area Networks) are the networks that link computer facilities within a city.

(1 Mark for appropriate answer)

f) Compare freeware and Shareware. 1

Answer:

Freeware, the name is derived from words "free" and"software". It is computer software that is available for use at no cost or for an optional fee. Freeware is generally proprietary software available at zero price, and is not free software. The author usually restricts one or more rights to copy, distribute, and make derivative works of the software.

Shareware is usually offered as a trial version with certain features only available after the license is purchased, or as a full version, but for a trial period. Once the trial period has passed the program may stop running until a license is purchased. Shareware is often offered without support, updates, or help menus, which only become available with the purchase of a license. The words "free trial" or "trial version" are indicative of shareware.

(1 Mark for any one appropriate difference)

g) How Trojan Horses are different from Worms? Mention any one difference. 1

Answer:

A Trojan horse is a term used to describe malware that appears, to the user, to perform a desirable function but, in fact, facilitates unauthorized access to the user's computer system A computer worm is a self-replicating computer program. It uses a network to send copies of itself to other nodes (computers on the network) and it may do so without any user intervention.

(1 Mark for any one appropriate difference)