

SAMPLE QUESTION PAPER

Class: XII

Subject: Computer Science (083)

Time: 03:00 Hrs

MM=70

General Instructions

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

- Q1. (a) What is the difference static and dynamic memory allocation? Explain giving example. [2]
- (b) Name the Header file(s) that shall be needed for the following C++ code [1]

```
void main()
{
    char word[30];
    strcpy ( word, "Pre Board Examination ");
    int s = strlen (word);
    if(s%2 == 0)
        cout<<setw(20)<<word;
}
```

- (c) Rewrite the following C++ program code after removing the syntax error(s) (if any). Underline each correction. [2]

```
#include<iostream.h>
class Student
{
    long admNumber;
    char name[30];

public →
    void addDetail(long a, char b[])
    {
        admNumber=a;
        name=b;
    }

    void showDetail()
    {
        cout<<"\n Admission Number :"<<admNumber;
        cout<<"\n Name of the student :"<<name;
    }
}
```

- (d) Find the output of the following program: [3]

```
#include<iostream.h>
void switchOver(int A[], int N, int split)
{
    for(int k=0; k<N; k++)
    {
```

```

        if(k<split)    A[k] +=k;
        else          A[k] *=k;
    }
}
void display(int A[], int N)
{
    for (int k=0; k<N; k++)
        (k%2==0)? cout<<A[k]<<"%" : cout<<A[k]<<endl;
}
void main()
{
    int X[]={30, 40, 50, 20, 10, 5};
    switchOver(X, 6, 3);
    display(X, 6);
}

```

(e) Find the output of the following program:

[2]

```

#include<iostream.h>
void main()
{
    int *Q, M[]={11, 22, 33, 44};
    Q=M;
    M[2] += 22;
    cout<<" Queen @ " <<*Q <<endl;
    *Q - = 11;
    Q += 2;
    cout<<" Now @" << *Q <<endl;
    Q++;
    cout<<"Finally @" << *Q <<endl;
    cout<<"New Value @" <<M[0] <<endl;
}

```

(f) In the following program, find the correct possible output(s) from the options:

[2]

```

#include<iostream.h>
#include<stdlib.h>
void main()
{
    randomize();
    int MyNum, Max=5;
    MyNum = 20 + random(Max);

    for(int N=MyNum; N<=25; N++)
        cout<<N<<"*";
}

```

OUTPUTS:

- | | |
|-----------------------|---------------------|
| (i) 20*21*22*23*24*25 | (ii) 22*23*24*25* |
| (iii) 23*24* | (iv) 21*22*23*24*25 |

Q2. (a) Answer the questions (i) to (iv) based on the following:

[4]

```

class MNC
{
    char Cname[25];           // Company name
protected:

```

```

        char Hoffice[25];                // Head Office
public:
    char Country[25];
    MNC();
    void enterData();
    void displayData();
};

class Branch : public MNC
{
    long NOE;                            // Number Of Employee
    char Ctry[25];                        // Country
protected:
    void association();
public:
    Branch();
    void add();
    void show();
};

class Outlet : public Branch
{
    char state[25];
public:
    Outlet();
    void enter();
    void output();
};

```

- (i) Which type of inheritance is shown in the above example?
- (ii) Which class' constructor will be called first at the time of declaration of an object of class Outlet? Give their proper order.
- (iii) How many bytes does an object belonging to class Outlet require?
- (iv) Name the data member(s), which are accessible from the object(s) of class Branch.

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

```

class Computer
{
    char C_name[20];
    char Config[100];
public:
    Computer();                // function 1
    Computer(char[],char []);  // function 2
    ~Computer()                // Function 3
};

```

(i) As per Object Oriented Programming, which concept is illustrated by **function 1** and **function 2** together?

(ii) What is **function 3** referred as? Write at least two important features of **function 3**.

(c) Differentiate between Constructor and Destructor function with respect to OOPS giving suitable example. [2]

(d) Define a class Student with the following specifications: [4]

Class name	Data Members	Type
Student	Std_name	string
	Std_rollno	long
	Marks	float
	Stream	string

A function assign_stream() to assign stream on the following basis:

Marks	Stream
300 and above	Science
Between 250 and 300	Commerce
Between 200 and 250	Humanities
Below 200	NULL

Public Member Functions:

- A constructor to initialize data members with legal initial values.
- A func initialize() to input the values for the data members and invoke assign_stream()
- A function to display the values of data members.

Q3. (a) Write a function in C++ to combine the contents of two equi-sized arrays A and B by computing their corresponding elements with the formula $2*A[i]+3*B[i]$; where value i varies from 0 to N-1 and transfer the resultant content in the third same sized array. [4]

(b) An array A[50][20] is stored in the memory along the row with each element requiring 8 bytes of storage. Find out the location of A[10][15], if A[0][0] is stored at 4200. [4]

(c) Define a function SWAPCOL() in C++ to swap (interchange) the first column with the last column elements, for a two dimensional integer array passed as the argument of the function
For Example [2]

If the 2-D array contains

After swapping the contents of the columns

2	1	4	9
1	3	7	7
5	8	6	3
7	2	1	2

9	1	4	2
7	3	7	1
3	8	6	5
2	2	1	7

(d) Evaluate the following postfix notation of expression: [2]
(Show status of Stack after each operation)

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

(e) Convert the following infix expression into postfix expression : [2]
(A * (B + (C + D) * (E + F) / G)) / H

Q4. (a) Observe the program segment given below carefully and fill the blanks marked as statement 1 and statement 2 using tellg() and seekp() functions for performing the required task. [1]

```
#include<fstream.h>
class Customer
```

```

{
    long Cno;
    char Name[20];
    char Phone[12];

public:
    void enter();           // Function to allow user to enter Cno, Name, Phone
    void modify();         // Function to allow user to modify Phone number

    long getCno()          // Function to return value of Cno
    {
        return Cno;
    }
};

void changePhoneNumber()
{
    Customer C;
    fstream fil;
    fil.open ("c_data.dat", ios::binary | ios::in | ios::out);
    long inp;

    cout<<"\nEnter the customer number whose phone number to change :":
    cin>>inp;

    while(fil.read((char*)&C, sizeof(C)))
    {
        if( inp == C.getCno())
        {
            C.modify();

            // statement 1: To find the current position of file pointer
            int pos=_____

            // statement 2: To move the file pointer to write the modified record back
            onto the file for the desired inp

            _____

            fil.write((char*)&C, sizeof(C));
        }
    }

    fil.close();
}

```

(b) Write a func. in C++ to count the number of digits present in a text file "ARTICLE.TXT". [2]

(c) Write a function **searchBook()** in C++, which input bookNo as argument to search for a BookNo from a binary file "BOOK.DAT", assuming the binary file is containing the objects of the following class: [3]

```

class BOOK
{

```

```

int Bno;
char Title[20];

public:
int getBno()          { return Bno;          }
void Enter()         { cin>>Bno; gets(Title); }
void Display()      { cout<<Bno<<" "<<Title<<endl; }
};

```

Q5. (a) What do you understand by Selection & Projection operations in relational algebra? [2]

(b) Consider the following tables Employee and Salgrade. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii)

Table: Employee

ecode	Name	Design	sgrade	doj	dob
101	Kapil Dev	Executive	S03	23-Mar-2003	13-Jan-1980
102	Ravi Chander	Head-IT	S02	12-Feb-2010	22-Jul-1987
103	Jim Carry	Receptionist	S03	24-Jun-2009	24-Feb-1983
105	Harsh Bhogle	GM	S02	11-Aug-2006	03-Mar-1984
108	Dinesh Kartik	CEO	S01	29-Dec-2004	19-Jan-1982

Table : Salgrade

sgrade	salary	hra
S01	56000	18000
S02	32000	12000
S03	24000	8000

- i) To display the details of all employees in descending order of doj. [1]
- ii) To display name and design of those employees, whose salgrade is either S02 or S03. [1]
- iii) To display the content of all the employees table, whose doj is in between '09-Feb-2006' and '08-Aug-2009'. [1]
- iv) To add a new row with the following details: [1]
109, 'Madhubala', 'Executive', 'S02', '09-Sep-2007', '21-Apr-1983'
- v) Select count(sgrade), sgrade from employee group by sgrade; [½]
- vi) Select min(dob), max(doj) from employee; [½]
- vii) Select name, salary from employee e, salgrade s [½]
where e.sgrade=s.sgrade and e.ecode<103;
- viii) Select sgrade, salary+hra as 'Net Salary' from salgrade where sgrade = 'S02' [½]

Q6. (a) Verify the following using Truth Table [2]

$$X + Y. Z = (X+Y).(X+Z)$$

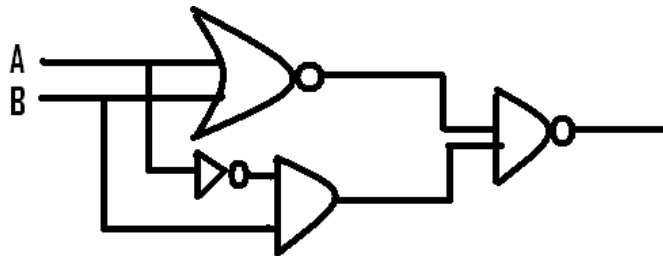
(b) Write the SOP form of a Boolean function G, which is represented in a truth table as follows:

[1]

X	Y	Z	G
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

(c) Write the equivalent Boolean expression for the following logic circuit.

[2]



(d) Reduce the following Boolean expression using K-map:
 $F(w, x, y, z) = \sum (0, 1, 2, 4, 5, 6, 8, 10)$

[3]

Q7. (a) Differentiate between XML and HTML.

[1]

(b) Expand the following terminologies:

[2]

i) CDMA

ii) GSM

iii) FTP

iv) SIM

(c) What is the purpose of using a Web Browser?

[2]

Name any two commonly used Web Browser.

(d) Out of the following, identify client side script(s) and server side script(s).

[1]

i) java script

ii) ASP

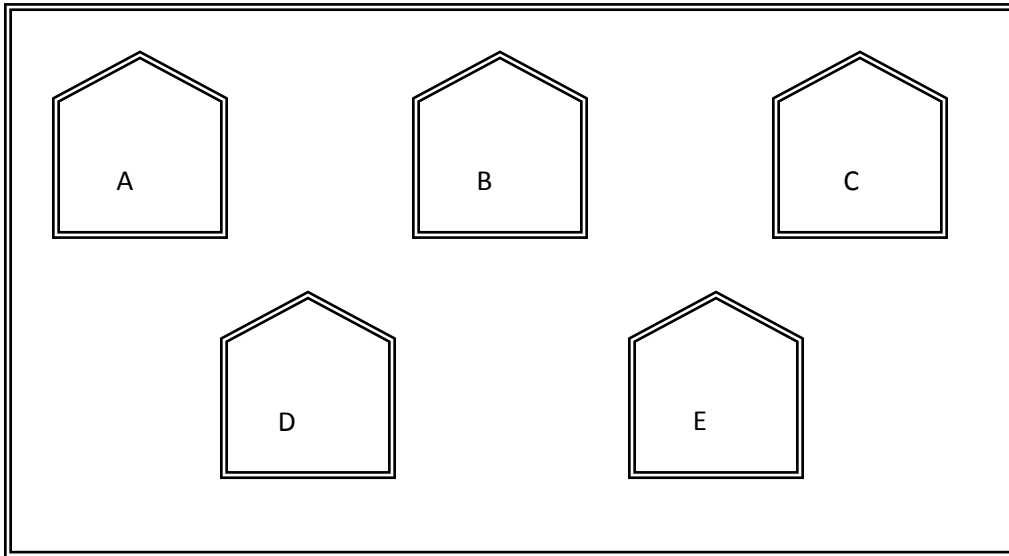
iii) vb script

iv) PHP

(e) Compare Open Source Software and Proprietary Software.

[1]

(f) Sun Microsystems Group has set up its new center at India for its office and web based activities. It has five buildings as shown in the diagram below:



Center to center distance between various buildings

A to B	50 Mts
B to C	30 Mts
C to D	30 Mts
D to E	35 Mts
E to C	40 Mts

No of computers

A	55
B	180
C	60
D	55
E	70

- i) Suggest a possible cable layout for connecting the buildings. [1]
- ii) Suggest the most suitable place to house the server of this organization with a suitable reason. [1]
- iii) Suggest the placement of the following devices with justification. [1]
 - A) Hub/Switch
 - B) Modem

----- Best Of Luck -----

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