

**CBSE Sample Paper 2012**  
**Class- XII**  
**Subject - Computer Science(083)**

**MAX. MARKS : 70**

**TIME ALLOWED : 3 HOURS**

*Note (i) All questions are compulsory. (ii) Programming Language : C++*

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Q1.

(a) What do you mean by static variable? Explain with help of example. (2)

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

(i) `getc ( )` (ii) `isalnum ( )` (iii) `scanf ( )` (iv) `eof ( )`

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

```
#include<iostream.h>
int main()
{
    structure student
    {
        int. rno, mark;
    }stu;
    student stuA= (1001,49);
    student stuB= stuA;
    if (stuA!= stuB)
        stuA.mark= 55;
    else
        stuB.mark= 25;
    cout<<stuA.mark<<stuv.mark;
}

```

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

```
#include<iostream.h>
void main()
{
    int list[5];
    *list=5;
    for(int i=1; i<5;i++)
        *(list+i)= *(list+i-1)*i;
    cout<<"\n";
    for(i=0;i<5;i++)
        cout<<" "<<*(list+i);
}

```

(e) What will be the output of the following program: (3)

```
#include <iostream.h>
void Secret(char Str[ ])

```

```

    {   for (int L=0;Str[L]!='\0';L++);
        for (int C=0;C<L/2;C++)
            if (Str[C]=='A' || Str[C]=='E')
                Str[C]=Str[L-C-1];
            else
            {   char Temp=Str[C];
                Str[C]=Str[L-C-1];
                Str[L-C-1]=Temp;
            }
        }
void main()
{   char Message[ ]="PreboardExam";
    Secret(Message);
    cout<<Message<<endl;
}

```

(d) Find the output of the following program:

(2)

```

#include <iostream.h>
#include <conio.h>
#include <stdlib.h>
void main ()
{
    char serial[] = {'A', 'B', 'C', 'D'};
    int number[] = { 2, 6, 7, 3};
    clrscr();
    randomize();
    cout << " The winner is : ";
    cout << serial [random(3)];
    for (int i = 0; i < 4; i++)
        cout << number[sizeof(int) + random(2) - 1 ];
    getch();
}

```

Outputs:

- (i) The winner is : A2776
- (ii) The winner is : D6766
- (iii) The winner is : B6767
- (iv) The winner is : C3672

Q2.

(a) How member functions and non member functions differ?

(2)

(b) Answer the questions (i) and (ii) after going through the following class. (2)

```
class Maths
{
    char Chapter [20];
    int Marks;
public:
    Maths (int x, char ch[ ]) //Function 1
    {
        -----
    }
    Math (Math & A1) //Member Function 2
    {
        -----
    }
};
```

(i) Complete the definitions of Member Function 1 and Member Function 2 in the above example.

(ii) How would Member Function 1 and Member Function 2 get executed?

(c) Define a class Taxpayer, whose class description is given below:- (4)

**Private Members:-**

int pan - to store the personal account no.  
char name[20] - to store the name  
float taxableinc - to store the total annual taxable income.  
float tax - to store the tax that is calculated.

computetax ( ) - A function to compute tax from the following rule:-

<b>Total Annual Taxable Income</b>	<b>Rate of Taxation</b>
Up to 60000	0%
Greater than 60000, less than = 150000	5%
Above 150000, upto 500000	10%
Above 500000	15%

**Public Members :-**

inputdata ( ) - A function to enter the data and call the compute tax( ) function.  
display( ) - To display the data.

(d) Answer the questions (i) to (iv) based on the following: (4)

```
class cloth
{
    char category [5];
```

```

char description [25];
protected :
float price;
public :
void entercloth ( );
void displaycloth ( );
};
class design : protected cloth
{
char design [21];
protected :
float cost;
public:
int design;
design ( ) { }
void enterdesign ( );
void dispdesign ( );
};
class costing : public cloth
{
float desingfee;
float stiching;
float cal_cp ( );
protected:
float costprice;
float sellprice;
public:
void entercost ( );
void dispcost ( );
costing ( );
};

```

- (i) Write the names of data members which are accessible from objects belonging to class cloth.
- (ii) Write the names of all members which are accessible from objects belonging to class design.
- (iii) Write the names of all the data members which are accessible from member functions of class costing.
- (iv) How many bytes will be required by an object belonging to class design?

Q3.

- (a) Write a function in C++ which accepts an integer array and its size as arguments / parameters and arrange all the odd numbers in the first row and even numbers in the second row of a two dimensional array as follows. The unused cells of two dimensional array must be filled with 0.

If the array is 1, 2, 3, 4, 5, 6  
The resultant 2-D array is given below

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

(b) A 2-d array defined as  $A[4..7, -1..3]$  requires 2 words of storage space for each element stored in row major order. Calculate the address of  $A[7,0]$  and base address if the location of  $A[6,2]$  as 126. (3)

(c) Consider the following portion of a program, which is implemented as linked list of library. Write the definition of function  $PUSH()$ , to insert a new node in the stack and definitions of function  $POP()$ , to delete a node from the stack (4)

```
struct Library
{
    int id;
    char name[20];
    Library *Link;
};
```

(d) Write a function in C++ which accepts a 2-D array of integers and its size as arguments and prints no of even numbers and odd numbers in each column. (2)

If the array is

11	12	31	41
52	62	71	82
9	10	11	12

The output will be

Column 1:	Even numbers : 1	Odd numbers : 2
Column 2:	Even numbers : 3	Odd numbers : 0
Column 3:	Even numbers : 0	Odd numbers : 3
Column 4:	Even numbers : 2	Odd numbers : 1

(e) Convert the expression  $(TRUE \ \&\& \ ! \ FALSE) \ || \ (FALSE \ \&\& \ TRUE)$  to postfix expression. Show the contents of the stack at every step (2)

Q4.

(a) What is the purpose of  $seekp()$  and  $seekg()$  (1)

(b) Write a function in C++ to read a text file "SPACE.TXT". Using this file create another file "OUT.TXT" by replacing more than one space by single space. (2)

Example:

If the file "SPACE .TXT" contains the following

**I like ice cream.**

The function should create another file OUT.TXT with the text

**I like ice cream.**

- (c) Write a function in C++ to transfer a particular type of stock from the file “inventory.dat” to another file “backinvent.dat”. Assuming that the binary file is containing the records of following structure : (3)

```

struct Products
{
    int id;
    char Iname[30];
    int type;
};

```

Remember that transfer means deletion from the “inventory.dat” file and addition in the “backinvent.dat” file.

Q5.

- (a) Explain Cartesian Product of two relations? (2)

- (b) Consider the following tables Client and Bill. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii) (6)

**Table : Client**

Cust_Id	Cust_Name	Address	Phone_no	City
C007	Pritam Sharma	12,M.G Road	71274250	Bangalore
C008	Sutopa	14/1 Pritam Pura	41206819	Delhi
C010	Anurag Basu	15A, Park Road	61281921	Kolkata
C012	Hrithik	7/2 Vasant Kunj	26121949	Delhi
C013	Firoz Shah	2, Servamali road	25014192	Bangalore
C025	Vinod Nagpal	46-a Navi Mumbai	64104944	Mumbai
C027	Sameer	41,Dwarka	42101619	Delhi
C002	Pasunjit Bose	16/A K.G Marg	27220012	Bangalore
C035	Aamina Begum	13/A Versova	41612181	Mumbai

**Table : BILL**

Ord_id	Cust_id	Item	Ord_date	Qty	Price
7002	C007	Pizza	20-11-07	1	249.50
7003	C013	Garlic Bread	24-10-05	3	75.75
7004	C012	Pasta	03-03-07	4	173.00
7005	C010	Ice Cream	01-01-08	30	195.75
7006	C035	Pizza	02-03-06	4	249.50
7009	C035	Garlic Bread	02-03-08	2	75.75
7010	C013	Brownie	04-05-07	4	40.50
7011	C014	Ice Cream	02-06-08	5	195.75
7012	C002	Pizza	01-02-08	7	249.50

- (i) Display a report containing cust\_id, cust\_name, Item,qty,price and bill amount. Bill amount is calculated as the sum of qty\*price
- (ii) Display how many customers have ordered Pizza in the month of March.
- (iii) Count the number of customer who have ordered item worth more than 1700. Total amount = sum of qty\* price

- (iv) Display the name of customer along with their city in alphabetical order of city
- (v) select Cust\_name , City, ord\_date from Client A, Bill b Where A.Cust\_id =b.Cust\_id;
- (vi) select Cust\_name from Client where Cust\_id=( Select Cust\_id from Bill where Year(ord\_date) =2008)
- (vii) select count(\*) from Client group by City;
- (viii) select Distinct (Item) from Bill;

Q6.

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

(b) Write the POS form of a Boolean Function F, which is represented by the following truth table: (1)

A	B	C	F
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

(c) Obtain the simplified form of the Boolean Expression using K' Map: (3)

$$F(x, y, z, w) = \sum (0,2,4,5,8,9,12,13,15)$$

(c) Represent OR operation using NAND gates only. (1)

(d) Write the equivalent Canonical Product of Sum for the following expression. (1)

$$F(A,B,C) = \sum(1,2,3,4)$$

Q7. (a) Compare any two Switching techniques. (1)

(b) What do you mean by a router and switch? (1)

(c) What is web Portal ? Name any one. (1)

(d) How is Freeware different from Free Software? (1)

(e) Expand the following : (2)

- a) FLOSS    b) HTML    c) GNU    d) ARPANET

(f) Akruiti Software Inc has set up its new Branch at Bangalore for its office and web based activities. It has four wings of buildings namely A , K , R , S. (4)

The distance between the wings are as follows :

Wing A to K	40 M
Wing K to R	120 M
Wing R to S	60 M
Wing A to S	170 M
Wing K to S	150 M
Wing A to R	70 M

The number of computers in each wing is shown below:

Wing A	25
Wing K	50
Wing R	125
Wing S	10

- i) Suggest a most suitable topology along with layout for connecting all the four wings.
- ii) Suggest the most suitable place to house the server with suitable reason.
- iii) Suggest the placement of the following device with justification.
  - a) Repeater
  - b) Modem
- iv) The organization is planning to link its head office situated in Delhi with the offices at Bangalore. Suggest an economic way to connect it; the company is ready to compromise on the speed of the connectivity. Justify your answer.

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