

Sample Paper – 2008
Class – XII
Subject – Computer Science

Time allowed : 3 hrs.

Maximum Marks : 70

Note: (i) All questions are compulsory. (ii) Programming Language: C++ (iii) Total Pages: 10

1. (a) Name the header file to which the following belong : **1**

(i) gotoxy() (ii) flushall()

(b) Illustrate the use of inline function in C++ with the help of an example. **2**

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

```
#include <stdio.h>
void main()
{
    int s1,s2,num;
    s1 = s2 = 0;
    for(x=0;x<11;x++)
    {
        cin<<num;
        if(num > 0)
            s1 += num;
        else
            s2 = / num;
    }
    cout<<s1<<S2;
}
```

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

```
#include<iostream.h>
#include<conio.h>
void ChangeContent(int Arr[], int Count)
{
    for(int C=1 ; C<Count ; C++)
    {
```

```

        Arr[C - 1] += Arr[C] ;
        Arr[Count - C] = Arr[C - 1];
    }
} //End of ChangeContent
void main()
{
    clrscr();
    int A[]={3, 4 , 5}, B[]={10,20,30,40}, C[]={900, 1200}, L ;
    ChangeContent(A,3);
    ChangeContent(B,4);
    ChangeContent(C,2);
    for(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]<<"#" ;
    getch();
}

```

(e) Find the output of the following program.

3

```

#include <iostream.h>
int modify(int temp = 2)
{
    if(temp % 3 == 0)
        temp = temp + 1;
    else
        temp = temp + 3;
    return temp;
}

```

```

void doupdation(int m, int &n)
{
    static int i;
    i++;
    m = n + i;
    if(n > 10)
        n = modify();
    else
        n = modify(n);
    cout<<m<<" ; "<<n<<endl;
}
void main()
{
    int x = 8, y = 20;
    doupdation(x,y);
    cout<<x<<" ; "<<y<<endl;
    doupdation(y,x);
    cout<<x<<" ; "<<y<<endl;
    getch();
}

```

- (f) What do you mean by self referential structures? Give an example. 2
2. (a) What is the benefit of declaring a data member as protected? 2
- (b) Consider the following code: 2

```

class ci
{
    int L;
public:
    ci (int j) { L = j; }           //function 1
    ci (ci & rv ) { L = rv.L; }   //function 2
    void initialize() { L = 0; }
};

```

Referring to the sample code above answer the questions (i) and (ii)

(i) How would function1 and function2 get executed? Give example.

(ii) main()

```
{
    ci original (1);
    ci X1(original);
    ci X2 = original;
}
```

Referring to above sample code, what initializes the object X1?

- (i) initialize() function (ii) The default constructor
(iii) The copy constructor (iv) The default copy constructor

Justify your answer.

(c) Define a class Travel in C++ with the following descriptions:

4

Private Members

TravelCode of type long
Place of type character array(string)
Season of type character array(string)
Total_fare of type float
Discount of type float

Public Members:

A constructor to assign initial values to TravelCode as 101, place as “Udaipur”, Season as “General” , Total_fare = 0 , Discount = 0.

A function NewTravel() which allows user to enter TravelCode, Place, Season and Total_fare. Also calculates the Discount as per the following conditions:

Season	Discount (%)
Deepawali	10
Holi	5
Christmas	15
Summer	12

General 0

Discount given on Total_fare

A function ShowTravel() to display all data members on screen.

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

```
class medicines
{
    char category[10];
    char date_of_manufacture[10];
    char company[20];
public:
    medicines();
    void entermedicinedetails();
    void showmedicinedetails();
};
class capsules : private medicines
{
    protected:
        char capsule_name[30];
        char volume_label[20];
    public:
        float price;
        capsules();
        void entercapsuledetails();
        void showcapsuledetails();
};
class antibiotics : public capsule
{
    int dosage_units;
    char side_effects[20];
    int use_within_days;
```

```

public:
    antibiotics();
    void enterdetails();
    void showdetails();
};

```

- (i) How many bytes will be required by an object of class medicines and an object of class antibiotics respectively?
- (ii) Write names of all the data member accessible from the object of antibiotics.
- (iii) Write names of all the members accessible from member functions of class antibiotics.
- (iv) Write names of all members accessible from member functions of class capsule.

3 (a) Write a function in C++ which accepts a 2D array of integers and its size as arguments and displays elements which are exactly two digit number. **3**

If 2D array is

129	3	9	14
2	25	146	1431
1924	32	45	327
11	455	28	18

Output is

14 25 32 45 11 28 18

(b) An array K[5][5] is stored in the memory with each element occupying 4 bytes of space. Assuming the base address of K to be 1000, compute the address of K[2][4], when the array is stored : **4**

- (i) Row wise
- (ii) Column wise

(c) Write a function in C++ to delete a node containing book's information, from a dynamically allocated Queue of books implemented with the help of following structure: **4**

```

struct book
{
    int BNo;

```

```

char BName[30];
book *link;
};

```

(d) Write a user defined function in C++ which intakes one dimensional array and size of array as argument and find sum of elements which are even. 3

If 1D array is 10 , 2 , 3 , 4 , 5 , 16 , 17 , 23

Then even numbers in above array is 10 , 2 , 4 , 16

Sum = 10 + 2 + 4 + 16 = 32

Output is 32

(e) Evaluate the following Postfix expression showing the stack contents. 2

5 , 12 , 4 , / , - , 6 , 4 , + , *

4. (a) Differentiate between read() and write() function. 1

(b) Assume that a text file named “MATHS.TXT” contains text and some mathematical operators written into it. “MATHS.TXT” contains only five types of operator ‘+’ , ‘-’ , ‘*’ , ‘/’ , ‘=’. Write a function named copyoperator() that reads the file “MATHS.TXT” and create a new file named “OPERATOR.TXT”, to contain only operators from the file “MATHS.TXT”. In “OPERATOR.TXT” operators are separated by comma. 2

For example: If “MATHS.TXT” contains

Result of $2 + 4 * 3 = 14$

Result of $16 / 2 + 1 = 9$

Then the file “OPERATOR.TXT” shall contain

+ , * , = , / , +

(c) Given a binary file “COLONY.DAT”, containing records of the following class colony type. 3

```

class colony
{
    char c_no[10];
    char c_name[40];
    long no_of_ppl;
}

```

```

public:
    void getdata()
    {
        gets(c_no); gets(c_name); cin>>no_of_ppl;
    }
    void showdata()
    {
        cout<<"Colony Number : "; puts(c_no);
        cout<<"Colony Name   : "; puts(c_name);
        cout<<" No. of peoples : "<<no_of_ppl;
    }
    char * returnname()
    {   return c_name;   }
};

```

Write a function in C++ that would read contents of file "COLONY.DAT" and display the details of those colonies where number of peoples are greater than 1000.

5. (a) What are DDL and DML ?

2

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

BOOKS

6

Book_Id	Book_Name	Author_Name	Publishers	Price	Type	Quantity
C01	Fast Cook	Lata Kapoor	EPB	355	Cookery	5
F01	The Tears	William Hopkins	First	650	Fiction	20
T01	My C++	Brain & Brooke	FPB	350	Text	10
T02	C++ Brain	A.W.Rossaine	TDH	350	Text	15
F02	Thunderbolts	Anna Roberts	First	750	Fiction	50

ISSUED

Book_Id	Quantity_Issued
---------	-----------------

T01	4
C01	5
F01	2
C01	6
T02	3

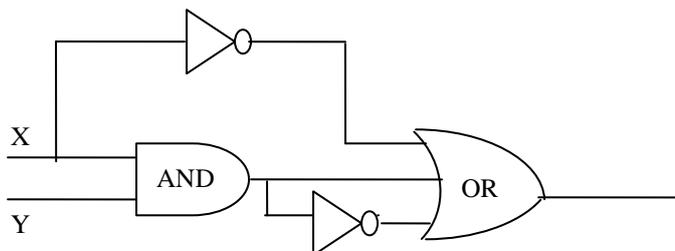
- i).** To list the names from books of Text type.
- ii).** To display the names and price from books in ascending order of their price.
- iii).** To increase the price of all books of EPB publishers by 50.
- iv).** To display the Book Name, Quantity_Issued and Price for all books of EPB publishers.
- v).** Select max(price) from books;
- vi).** Select count(DISTINCT Publishers) from books where Price >=400;
- vii).** Select Book_Name, Author_Name from books where Publishers = 'First';
- viii).** Select min(Price) from books where type = 'Text';

6 (a) State Distributive Law and verify the same using truth table. 2

(b) Write the Product of Sums form of the function $G(U,V,W)$, truth table representation of G is as follows : 2

U	V	W	G
0	0	0	1
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	0

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



(d) Reduce the following Boolean Expression using K-Map 2

$$F(A,B,C,D) = \sum (0, 3, 4, 5, 7, 11, 13, 15)$$

7. (a) Write one advantage and disadvantage of Optical Fiber 1

(b) Expand the following terms with respect to Networking. 2

i). CDMA

ii). GSM

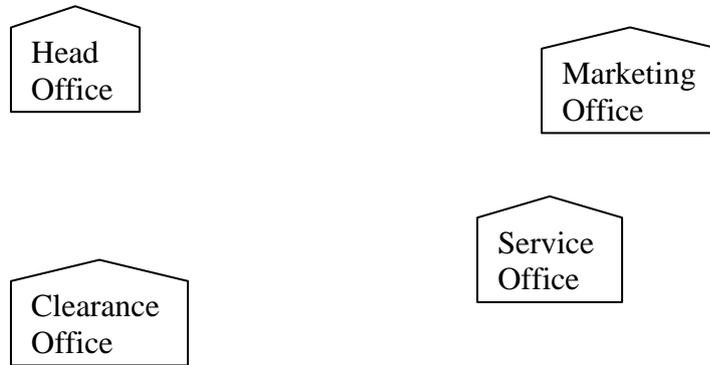
iii). SMTP

iv). FTP

(c) What is Website and what is Home Page? 1

(d) PNC Private Ltd. Has four branches in Udaipur city named as “Head Office” , “Marketing Office” , “Clearance Office” and “Service Office”. PNC Company wants to establish the networking between all the four offices. 4

A rough layout of the same is as follows:



Approximate distances between these offices as per network survey team are as follows:

Place From	Place To	Distance
Head Office	Marketing Office	20 m
Marketing Office	Clearance Office	200 m
Clearance Office	Service Office	40 m
Head Office	Service Office	270 m
Marketing Office	Service Office	80 m
Head Office	Clearance Office	90 m

In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

Head Office	20
Marketing Office	100
Clearance Office	40
Service Office	60

- i). Suggest cable layout(s) for connecting the offices.
- ii). Marketing office is used for many critical operations. It is tried that each PC gets maximum possible bandwidth. Which network device should be used for this?
- iii). Where would you suggest the placement of server?

- iv).** The company also has another office out of city but at a distant location about 50-55 km away. How can link be established with this office (i.e. suggest the transmission medium)?