

SAMPLE PAPER  
Class- XII  
Computer Science(083)

**Max Marks: 70**

**Time: 3 Hrs**

*General Instructions:*

- *Programming Language used is C++.*
- *All questions are compulsory.*

Q1 a) What is the difference between Call by Value and call by Reference ? Explain with code. 2

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

setw()                      ii) sqrt()

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

```
#include<iostream.h>
#include<stdio.h>
class MyStudent
{
int StudentId = 101;
char Name[20];
public:
MyStudent (){}
void Register(){cin>> StudentId;
gets name
}
void Display(){ cout << StudentId<<"", "<<name<<endl;
};
void main()
{MyStudent MS
Register.MS;
MS.display();
}
```

d) Find the output of the following program:

```
#include<iostream.h>
```

```
void main ( )
```

```
{int N [ ] = { 10 , 15 , 20 , 25 , 30}
```

```
int *z = N;
```

```
while (*z<30)
```

```
{
```

```
    if(*z % 3 !=0 )
```

```
        *z = *z + 2;
```

```
    else
```

```
        *z = *z + 1;
```

```
z++;
```

```
}
```

```
for (int R = 0 ; R <=4 ; R++ )
```

(3)

```
{
cout<<N[R]<<" $ ";
If (R % 3 == 0)
cout<<endl;
}
cout<<N[4] * 3 <<endl;
}
```

e) Give the output of the following program:

2

```
#include<iostream.h>
#include<ctype.h>
void ReCode ( char Text[ ], int Num );
void main ( )
{
    char Note [ ] = "GooDLUck";
    Recode (Note, 2);
    cout << Note <<endl;
}
void ReCode (char Text [ ], int Num)
{
    for ( int K = 0 ; Text [K] !='\0' ; K++)
        if ( K % 2 == 0)
            Text [K] = Text [K] - Num;
        else if ( islower (Text[K] ))
            Text [K] = toupper ( Text [K] )
        else
            Text[K] = Text[K] + Num;
}
```

f) Study the following program and select the possible output from it :

2

```
#include <iostream.h>
#include<stdlib.h>
const int MAX = 3;
void main()
{
    randomize();
    int Number;
    Number = 50 + random (MAX);
    for (int p = Number; P>=50; P--)
        cout <<p<<"#";
    cout <<endl;
}
```

Q2 : a) What is Function overloading ? Give an example to illustrate it.

2

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

2

```
class Seminar
{
```

```
int Time;
public:
Seminar()           //Function 1
{
    Time=30;cout<<"Seminar starts now"<<endl;
}
void Lecture() //Function 2
{
    cout<<"Lectures in the seminar on"<<endl;
}
Seminar(int Duration) //Function 3
{
    Time=Duration;cout<<"Seminar starts now"<<endl;
}
~Seminar() //Function 4
{
    cout<<"Thanks"<<endl;
}
};
```

- i) In Object Oriented Programming, what is Function 4 referred as and when does it get invoked/called?  
 ii) In Object Oriented Programming, which concept is illustrated by Function 1 and Function 3 together?  
 Write an example illustrating the calls for these functions.

c) Define a class **HOTEL** in C++ with the following description : private members : 4

Rno Room No of int type

Name Customer name of char type

Tarrif stores per day charges of float type

NOD no of days integer

CALC() A function to calculate and return Amount as  $NOD * Tarrif$  and if the value of  $NOD * Tarrif$  is more than 10000 then as  $1.05 * NOD * Tarrif$

Public Members:

Checkin // A function to enter the Rno, Name , Tarrif and NOD

Checkout // A function to display Rno, Name, Tarrif, NOD and Amount by calling CALC()

d) Answer the question (i) to (iv) based on the following

```
class Book
```

```
{
    char Title[20];
    char Author[20];
    int noofpages;
public:
    void read();
    void show();    };
```

```
class TextBook: private Book
{ int noofchap, noofassignments;
protected:
    int standard;
public:
```

```
void readtextbook();
void showtextbook();
}
class Physicsbook:public Textbook
{
    char Topic[20];
    public :
    void readphysicsbook();
    void showphysicsbook();
};
```

- (i) Names the members , which are accessible from the member functions of class Physicsbook.
- (ii) Write the names of members , which are accessible by an object of class Textbook.
- (iii) Write the names of all members , which are accessible by an object of class Physicsbook.
- (iv) How many bytes will be required by an object belonging to class Physicsbook. (4)

Q3 a) Write a function CHANGE () in C++ , which accepts an array of integer and its size as parameters and divide all those array elements by 7 which are divisible by 7 and multiply other elements by 3. (3)

b) An array T[50][20] is stored in the memory along the column with each of the elements occupying 4 bytes , find out the base address and address of elements T[30][15],if an element T[25][10] is stored at the memory location 9800. (3)

c) Write function in C++ to perform Insert operation in a dynamically allocated Queue containing names of employees . (4)

(d) Write a function in SWARARR() in C++ to swap(interchange) the first row elements with the last row elements for a two dimensional array passed as the argument of the function. (2)

(e) Evaluate the following postfix notation of expression. (2)

FALSE, TRUE, NOT, OR, TRUE, FALSE, AND , OR

Q4: a) Observe the program segment given below carefully, and answer the question that follows(1)

```
class Candidate
{
    long CId ;           //Candidate's Id
    char CName[20];      // Candidate's Name
    float Marks;         //Candidate's Marks
    public :
    void Enter( ) ;
    void Display( ) ;
    void MarksChange ( ) ;    // Function to change marks
    long R_CId( ) { return CId ; }
};
void MarksUpdate ( long ID)
{ fstream File ;
File.open (" CANDIDATE.DAT", ios :: binary | ios :: in | ios :: out ) ;
Candidate C ;
int Record = 0 , Found = 0;
```

```
while ( ! Found && File . read ( ( char *) & C , sizeof ( C ) ) )
if ( Id == C.R_CId ( ) )
{ cout << “ Enter new marks” ;
C. MarkChange ( );
_____ // Statement 1
_____ // Statement 2
Found = 1 ;
}
```

```
Record ++ ;
}
if ( found == 1 ) cout << “ Record Updated “ ;
File. close ( );
}
```

Write the Statement 1 **to position** the File pointer at the beginning of the Record for which the candidate's Id matches with the argument passed, and Statement 2 **to write** the updated Record at that position.

b) Write a function in C++ to count the number of uppercase alphabets present in a text file “ ARTICLE.TXT”. (2)

c) Given a binary file TELEPHON.DAT, containing records of the following class Directory : (3)

```
class Directory
{
char Name [20] ;
char Address [30] ;
char AreaCode[5] ;
char Phone_No[15] ;
public :
void Register ( ) ;
void Show ( ) ;
int CheckCode (char AC [ ] )
{
return strcmp ( AreaCode , AC ) ;
}
};
```

Write a function COPYABC ( ) in C++ , that would copy all those records having AreaCode as “123” from TELEPHON.DAT to TELEBACK.DAT.

Q 5 a) What do you mean by DDL and DML commands? Give an example of each (2)

b) Consider the following table Organisation and Grossincome and answer (I) and (II) part of the question:

**Table: ORGANISATION**

ECODE	NAME	POST	SGRADE	DOJ	DOB
2001	AJAY	GENERAL MANAGER	D003	23-Mar-2003	13-Jan-1980
2002	VIJAY	EXECUTIVE MANAGER	D002	12-Feb-2010	22-Jul-1987
2003	RAM	DEPUTY MANAGER	D003	24-Jan-2009	24-Feb-1983
2004	RAHIM	PROD. INCHARGE	D002	11-Aug-2006	03-Mar-1984
2005	ABBAS	ADD.GENERAL MANAGER	D001	29-Dec-2004	19-Jan-1982

**Table:GROSSINCOME**

SGRADE	SALARY	HRA
D001	56000	18000
D002	32000	12000
D003	24000	8000

**(I) Write SQL commands for the following statements:**

(4)

- To display the details of all MEMBERS OF ORGANISATION in descending order of DOJ.
- To display NAME and POST of those MEMBERS whose SGRADE is either D002 or D003.
- To display the content of all the ORGANISATION table, whose DOJ is in between 09-Feb-2006 and 08-Aug-2009.
- To add a new row with the following  
2007, 'RUDRA', 'SALES INCHARGE', 'D002', '26-Sep-2011', '26-Sept-1983'

**(II) Give the output of the following SQL queries :**

(2)

- SELECT COUNT(SGRADE), SGRADE FROM ORGANISATION GROUP BY SGRADE;
- SELECT MIN(DOB), MAX(DOJ) FROM ORGANISATION;
- SELECT NAME,SALARY FROM ORGANISATION O, GROSSINCOME G  
WHERE O.SGRADE=G.SGRADE AND O.ECODE<2003;
- SELECT SGRADE, SALARY+HRA FROM GROSSINCOME WHERE SGRADE='D002'

Q 6 : a) State and Verify Distributive Law. Verify using Truth Table.

2

b) Represent the Boolean expression  $yz+xz$  with the help of NAND gates only.

1

c) Obtain simplified form for a Boolean expression

$F(x,y,z,w) = (1,3,4,5,7,9,11,12,13,15)$  using K Map

3

d) Write SOP form of Function  $F(x,y,z)$  whose truth table representation is given below:2

x	y	z	F
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

Q7a) Compare any two Switching techniques.

1

b) Which of the following is not a Client Side script:

1

(i) VB Script (ii) Java Script

(iii) ASP (iv) PHP

c) If someone has hacked your Website, to whom you lodge the Complain?

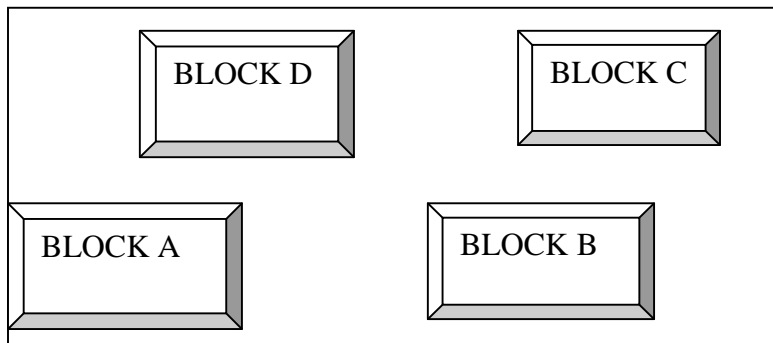
1

d) What do you mean by IP Address? How is it useful in Computer Security?

1

- e) ABC Systems Organisation has set up its new center at Jabalpur for its office and web based activities. It has 4 blocks of buildings as shown in the diagram below:

4



#### Center to center distances between various blocks

Block A to Block B	80 m
Block B to Block C	250 m
Block C to Block D	50 m
Block A to Block D	190 m
Block B to Block D	125 m
Block A to Block C	90 m

#### Number of Computers

Block A	25
Block B	50
Block C	150
Block D	10

- Suggest a cable layout of connections between the blocks.
- Suggest the most suitable place (i.e. block) to house the server of this organization with a suitable reason.
- Suggest the placement of the following devices with justification
  - Repeater
  - Hub/Switch
- The organization is planning to link its International Office situated in Mumbai , which wired communication link , you will suggest for a very high speed connectivity?
- What is meant by Trojan Horse and Virus in terms of computers?
- What was the role of ARPANET in the communication network ?

1

1