

Sample Paper 2015
Subject: Computer Science (083)
Class -XII

Time Allowed: 3 Hr.

M.M:70

Q1.

(a) What is the difference between Actual Parameter and Formal Parameter? Give an example in C++ to illustrate both types of parameters.

2

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

```
void main()
{
    struct student
    {
        int id;
        char name[20]
        gets(id);
        strcpy(name,"sachin");
    }
}
```

(c). Rewrite the given snippet after removing the syntactical error(s), if any. Underline each correction

2

```
#include<iostream.h>
void main( )
{
    struct test
    { char test_name[20];
    char type;
    int tickets=10;
    } object;
    gets(test_name);
    puts(test_name);
}
```

(d) Find the output of the following program (Assuming that all required header files are included) 2

```
void main( )
{
    char * NAME = "InForMATion";
    for( int x=0;x<strlen(NAME);x++)
    if(islower(NAME[x])
    NAME[x] = toupper(NAME[x]);
    else
    if(isupper (NAME[x]))
    if(x%2==0)
    NAME[x] = NAME[x -1];
    else
    NAME[x]--;
    cout<<NAME <<endl;
}
```

(e) Find the output of the following program

```
#include<iostream.h>
void change(int &a, int b=10)
```

2

```

{ if(b%10==0)
a+=5;
for(int i=5;i<=a;i++)
cout<<b++<<...;
cout<<endl;
}
void Disp(int x)
{
if(x%3==0)
Modify(x);
else
change(x,3);
}

void main()
{
Disp(3);
Disp(4);
change(2,20);
}

```

f) Observe the following program carefully & choose the correct possible output from the options (i) to (iv) justifying your answer.

2

```

#include<iostream.h>
#include<conio.h>
#include<stdlib.h>
void main( )
{
clrscr( );
randomize( );
int RN;
RN=random(4)+5;
for(int i=1;i<=RN;i++)
cout<<i<<' ';
getch();
}

```

i) 0 1 2

ii) 1 2 3 4 5 6 7 8

iii) 4 5 6 7 8 9

iv) 5 6 7 8 9 10 11 12

Q2 (a) What are the main advantages of Object oriented programming over the procedural programming

3

(b.) 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

(c) 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"<<endl;
    }
    void Details() //Function 2
    {
        cout<<"Inter Section Basketball Match"<<endl;
    }

    Match(int Duration) //Function 3
    {
        Time=Duration;
        cout<<"Another Match begins now"<<endl;
    }
    Match(Match &M) //Function 4
    {
        Time=M.Duration;
        cout<<"Like Previous Match "<<endl;
    }
};
```

- Which category of constructor - Function 4 belongs to and what is the purpose of using it?
- Write statements that would call the member Functions 1 and 3

(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?

Q3. (a) If two – dimensional array C[5.....9, -4.....10] is stored using columnmajor representation, then calculate the address of C[8,6], if the base address is 100 and each element requires 4 bytes of memory. 3

(b) Write an user defined function SumRow(int A[][],int M, int N) to display sum of each row elements of a square matrix. Here A is a 2-Dimension matrix, M and N are the no. of Rows and Columns in the matrix. 2

(c) Write a function to insert and delete values in a dynamic queue and display them . 4

```

struct Node
{
Node * link;
char name[20];
int pincode;
};

```

(e) Convert the following infix expression into postfix. show the stack status after execution of each operation: 2

TRUE OR FALSE AND NOT FALSE OR FALSE

(c) Write the user defied function which accept an integer array and its size and convert it into 2D Array as follow 2

if array is 1 2 3 then
2 D array should be

```

1 0 0
1 2 0
1 2 3

```

and if 1 2 3 4 5 then

```

1 0 0 0
1 2 0 0
1 2 3 0
1 2 3 4 0

```

1 2 3 4 5

Q4 (a) Observe the program segment given below carefully and fill the blanks marked as Statement1 and Statement2 using read() and write () functions for performing the required task. 1

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

```
class Item
```

```
{
```

```
int Imno; char Item[20];
```

```
public:
```

```
//Function to search and display the content from a particular record number
```

```
void Search (int) ;
```

```
//Function to modify the content of a particular record number
```

```

        void Modify(int);
};
void Item :: Search (int RecNo)
{
    ifstream File;
    File.Open("STOCK.DAT" , ios :: binary | ios :: in);
    File.seekg(0,ios::beg);
    ----- //statement 1
    Cout <<Ino <<" = = >" << Item << endl;
    File.close ( );
}

```

(b) Write a function to count the word and character of each line from a text file matter.txt.

Ex. No Smoking i.e. character -10 and word -2 2

(c) Given a binary file "BUS.DAT", containing records of the following class colony type. 3

```

class bus
{
    int bus_no;
    char desc[40];
    int distance; //in km
public:
    void bus::read()
    { cin>>bus_no; gets(desc) ; cin>>distance; }
    void bus::display()
    { cout<<bus_no; puts(desc); cout<<distance; }

    int bus::retdist()
    { return distance; }
};

```

Write a function in C++ that would read contents of file "BUS.DAT" and display and transfer the details of those buses which travels distance more than 100 km to other file "Temp.DAT".

Q5 (a) What do you understand by Primary Key and Candidate key? Illustrate with suitable example? 1

(b) Consider the following tables EMPLOYEE and SALARIES. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii) 1X6=6

TABLE: EMPLOYEE

EMPID	EMPNAME	SECTION	SEX	EXPERIENCE
101	Sabeena	PRODUCTION	F	10
102	Siva	ACCOUNTS	M	15
103	Ayaz	INSPECTION	M	10
104	Gayathri	PRODUCTION	F	8
105	Poorna	ACCOUNTS	F	9
106	Giridhar	INSPECTION	M	10
107	Sindhu	PRODUCTION	F	13
108	Suganya	ACCOUNTS	F	11
109	Hemanth	PRODUCTION	M	15
110	Suprakya	ACCOUNTS	F	7

TABLE: SALARIES

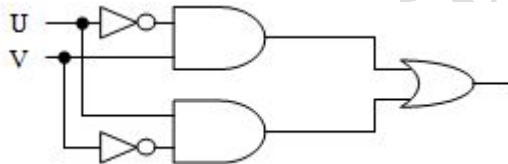
EMPID	SALARY	INCENTIVE	ALLOWANCE
101	18000	1800	1325
103	23150	3100	1121
105	13120	2300	1240
106	12550	1250	1005
107	11145	1100	1290
109	18900	1990	1200
110	21400	2100	1312

I. Display EMPNAME of all staff who are in "ACCOUNTS" having more than 10 years' experience from the table

EMPLOYEE.

- II. Display the average PAY of all staff working in "INSPECTION" department using the tables EMPLOYEE and SALARIES. The total pay is calculated as $PAY = SALARY + INCENTIVE + ALLOWANCE$.
- III. Display the minimum INCENTIVE of female staff.
- IV. Display the highest ALLOWANCE among all male staff.
- V. SELECT count (*) from EMPLOYEE where SEX = "F".
- VI. SELECT EMPNAME, SECTION, ALLOWANCE from EMPLOYEE, SALARIES where SECTION = "ACCOUNTS" and EMPLOYEE.EMPID = SALARIES.EMPID.
- VII. SELECT EMPNAME from EMPLOYEE where SECTION= INSPECTION and SEX='M'
- VIII. Select count (distinct SECTION) from EMPLOYEE

- Q6. (a) State and algebraically verify Demorgan's Laws. 2
- (b) Write the equivalent Boolean Expression for the following Logic Circuit 1



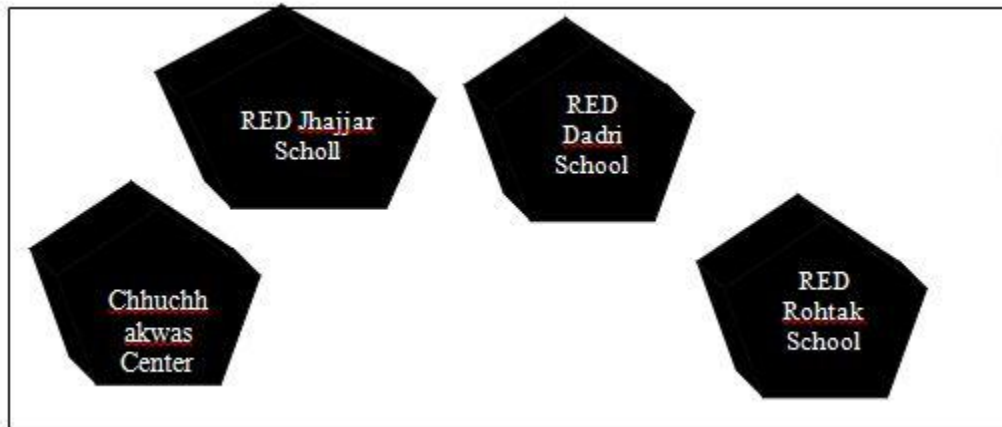
- (c) Write the POS form of a Boolean function F, which is represented in a truth table as follows: 1

A	B	C	F
0	0	0	0
0	0	1	1
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
 $F(A,B,C,D) = \sum(0,1,2,4,5,6,8,10,11,14,15)$
- (e) What will the dual form of given expression:
 $(A+B)'(A'+B')A'B'$

- Q7 (a) Define the term Bandwidth. Give any one unit of Bandwidth. 1

- (b) Expand the following terms? 2
- (i) CDMA
 - (ii) SGMA
 - (iii) TCP/IP
 - (iv) WAN
- (c) What do you mean by Open Source Software? 1
- (e) What is Modem? 1
- (f) What is propriety software? Give one example? 1
- (g) R.E.D Group of Institute is setting up its Academic School at Rohtak and planning to set up a network. The Institute has 3 academics schools and one administration center as shown in the diagram below:



4

Center to center distances between various buildings is as follows:

RED Rohtak School to RED Dadri School	160 M
RED Rohtak School to RED Jhajjar Scholl	190 M
RED Rohtak School to Chhuchhakwas Center	115 M
RED Jhajjar Scholl to Chhuchhakwas Center	125 M
RED Dadri School to RED Jhajjar Scholl	140 M
RED Dadri School to Chhuchhakwas Center	145M

Number of Computers in each of the school /center is follows;

Chhuchhakwas Center	125
RED Jhajjar Scholl	70
RED Dadri School	35
RED Rohtak School	25

- I. Suggest the most suitable place (i.e school/center) to install the server of this university with suitable reason.
- II. Suggest an ideal layout for connecting these school/center for a wired connectivity.
- III. Which device will you suggest to be placed/installed in each of these schools/center to *efficiently* connect all the computers with in these schools/center?

- IV. The Institute is planning to connect its admission office in the closest big city, which is more than 350km from the Institution. Which type of network out of LAN, MAN, OR WAN will be formed? Justify your answer.

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