

SAMPLE PAPER - 2014
Subject: Computer Science (083)
Class 12th

Time Allowed : 3 Hr.

M.M.: 70

General Instruction

1. Please check this question paper contains 10 printed pages.
2. Please check that this question paper contains 7 questions.
3. Please write down serial number of the question before attempting it.
4. All questions are compulsory.
5. Programming language : C++

- Q1.(a) What is the difference between the call by value and call by reference? Give an example in c++ to illustrate both. 2
- (b) Name the header files, to which the following built-in functions belong to: 1
- (i) eof () (ii) isalpha
- (c) Identify and correct the error(s) in the following program: 2
- ```
#include<iostream.h.
Main {
 float class = 10.7;
 float y;
 y = class % 5.0;
 cout<<class <<" , "<<y;
}
```
- (d) Give the output of the following Program: 2
- ```
#include<iostream.h
int a = 3;
void demo (int &x, int y, int *z)
{
    a += x;
    y * = a;
    *z = a + y;
    cout<<a<<" , "<<x<<" , "<<y<<" , "<<z<<endl;
```

```

}
void main( )
{
    int a = 2, b=5;
    demo(::a,a,&b);
    cout<<::a<<" "<<a<<" "<<b;
}

```

- (e) Give the output of the following Program:

3

```

#include<iostream.h>
void withdef ( int HisNum = 30)
{
    for ( int I = 20 ; I<= HisNum; I+= 5)
        cout<<I<<" ";
        cout<<endl;
}
void Control( int &MyNum )
{
    MyNum += 10;
    withdef(MyNum);
}
void main( )
{
    int YourNum = 20;
    Control(YourNum );
    withdef( );
    cout<< "Number="<<YourNum<<endl;
}

```

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

2

```

#include<iostream.h>
#include<conio.h>
#include<stdlib.h>
const int LIMIT = 4;

```

```
void main( )
{
    randomize( );
    int Points;
    Points = 100 + random(LIMIT);
    for ( int p = Points; p>=100; p--)
        cout<<p<<"#";
    cout<<endl;
}
```

- (i) 103#102#101#100#
- (ii) 103#102#101#100
- (iii) 101#102#103#104#
- (iv) 103#102#101#100#

Q.2 (a) What do you understand by Copy Constructor? Explain with suitable example. 2

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

```
class Travel
{
    int days;
public:
    Travel ( ) // Function 1
    {
        Days = 50; cout << " Journey starts now" << endl;
    }
    void sightseeing( ) // Function 2
    {
        cout << " Sightseeing in the journey starts" << endl;
    }
    Travel (int Duration) // Function 3
    {
        Days = Duration; cout << " Journey starts now" << endl;
    }
    ~ Travel ( ) // Function 4
```

```
{
    cout << " Happy journey" << 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 Garments in C++ with the following descriptions :** **4**

Private members :

- Gcode of type string
- Gtype of type string
- Gsize of type integer
- Gfabric of type string
- Gprice of type float

A function **Assign ()** which calculates and assigns the value of Gprice as follows :

For the value of Gfabric "COTTON" ,

Gtype	Gprice(Rs)
TROUSER	1300
SHIRT	1100

For Gfabric other than "COTTON" the above mentioned Gprice gets reduced by 10%

Public members:

A constructor to assign initial values of Gcode, Gtype, and Gfabric with the word "NOT ALLOTTED" and Gsize and Gprice with 0.

A function Input() to input the values of the data members Gcode, Gtype, Gsize and Gfabric and invoke the Assign() function.

A function to Display() which displays the content of all the data members for a Garments.

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

```
class Car
```

```
{
    char Model[10];
    char Date_of_purchase[10];
    char Company[20];
public();
    Car();
    void entercarddetail();
    void showcarddetail();
};
class Accessories : public Car
{
protected:
    char stereo_tape[30];
    char sheet_cover[20];
public:
    float Price;
    Accessories();
    void enteraccessoriesdetails();
    void showaccessoriesdetails();
};
class Dealer : public car
{
    int No_of_dealers;
    char dealers_name[20];
    int No_of_products;
```

public:

```
Dealer();

void enterdetails();

void showdetails();

};
```

- (i) (a) How many bytes will be required by an object of class Car and an object of class Dealer?
 (b) Which type of inheritance is illustrated in the above c++ code?
- (ii) Write names of all the data members which are accessible from the objects of class Dealer.
- (iii) Write names of all the members accessible from member functions of class Accessories.
- (iv) Write names of all the member functions which are accessible from objects of class Dealer.

Q.3 (a) Write the function SWAPCOL() in C++ to swap (interchange) the first column elements with the last column elements, for a two dimensional integer array passed as the arguments of the function. 3

Ex. If the two dimensional array contains.

After swapping of the content of 1st column and last column it should be

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

- (b) If an array B[11][8] is stored as column wise and B[2,2] is stored at 1024 and B[3,3] at 1084. Find the addresses of B[5,3] and B[1,1]. 3
- (c) Define functions stackpush() to insert nodes and stackpop() to delete nodes, for a linked list implemented stack having the following structure for each node: 4

struct node

{

```
char name[20];

int age;

node *LINK;
```

```
};
```

- (d) Obtain the postfix notation for the following infix notation of expression showing the contents of the stack and postfix expression formed after step of conversion: 2

$A * B + (C - D / F \uparrow G) * H$

- (e) Write a user defined function Upper_half() which takes a two dimensional array A, with size N rows and N columns as arguments and print the upper half of the array. eg. 2

	2	3	1	5	0		2	3	1	5	0
	7	1	5	3	1		1	5	3	1	
If A is	2	5	7	8	1	The Output Will be		7	8	1	
	0	1	5	0	1			0	1		
	3	4	9	1	5						5

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

```
class Team
{
long TId;
char TName[20];
float points;
public:
void Accept( );
void Show( );
void PointChange( );
long R_TId( ) {return TId;}
};
void ReplacePoints(long Id)
{
fstream File;
```

```
File.open ("Team.Dat",ios::binary|ios::in|ios::out);
Team T;
int Record=0, found=0;
while(!found && File.read((char*)&T, sizeof(T)))
{
if (Id==T.R_TId())
{
cout<<"Enter New Points";
T.PointChange ();
_____ //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 Team's ID matches with the argument passed, and Statement 2 to write the updated record at the Position.

- (b) Write a function in C++ to print the count of the word "Me" and "My" (ignoring the case) as an independent word in a text file STORY.TXT.

If the file "Story.txt" content is as follows:

My first book was me and My
family. It gave me change to be
known to the world.

The output of the function should be Count of Me/My in file: 4 2

- (c) Write a function in C++ to search and display details, whose destination is "Delhi" from a binary file "Train.Dat". Assuming the binary file is containing the objects of the following class: 3

```
class TRAIN
{
int Tno; // Train Number
```

```

char From[20];      //   Train Starting Point
char To[20];       //   Train Destination

public:
char * GetFrom ( ); {   return from;   }
char * GetTo ( );  {   return To;    }
void input()       {   cin>>Tno>>; gets(From); get(To); }
void show ( )     {   cout<<Tno<< “:”<<From << “:” <<To<<endl; }
};

```

- Q 5. (a) Differentiate between Primary key and Foreign Key in context of RDBMS. Give suitable example. 2
- (b) Consider the following table DRESS and MATERIAL. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii). 6

Table: DRESS

DCODE	DESCRIPTION	PRICE	MCODE	LAUNCHDATE
10001	Formal Shirt	1250	M001	12-JAN-08
10020	FROCK	750	M004	09-SEP-07
10012	INFORMAL SHIRT	1450	M002	06-JUN-08
10019	EVENING GOWN	850	M003	06-JUN-08
10090	TULIP SKIRT	850	M002	31-MAR-07
10090	PENCIL, SKIRT	1250	M003	19-DEC-08
10023	SLACKS	850	M003	20-OCT-08
10089	FORMAL PANT	1450	M001	09-MAR-08
10009	INFORMAL PANT	1400	M002	20-OCT-08
10024	BABY TOP	650	M003	07-APR-07

TABLE: MATERIAL

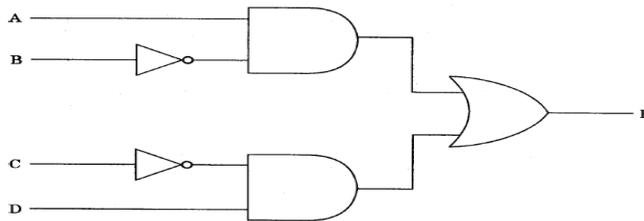
MCODE	TYPE
M001	TERELENE
M002	COTTON
M004	POLYESTER
M003	SILK

- (i) To display DCODE and DESCRIPTION of each dress in ascending order of DCODE.
- (ii) To display the details of all the dresses which have LAUNCHDATE in between 05-DEC-07 and 20-JUN-08 (inclusive of both the dates)
- (iii) To display the average PRICE of all the dresses which are made up of material with MCODE as M003.
- (iv) To display material wise highest and lowest price of dresses from DRESS table.
(Display MCODE of each dress along with highest and lowest price) .

- (v) SELECT SUM(PRICE) FROM DRESS WHERE MCODE= 'M001';
- (vi) SELECT DESCRIPTION , TYPE FROM DRESS MATERIAL WHERE DRESS.DCODE>=1250;
- (vii) SELECT MAX(MCODE) FROM MATERIAL ;
- (viii) SELECT COUNT(DISTINCT PRICE) FROM DRESS.

Q6. (a) State and verify Absorption's Law and Demorgan's Law using **truth table** and **algebraically**.

(b) Write the equivalent Boolean Expression for the following Logic Circuit



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

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	1

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

$$F(U,V,W,Z)= \sum(0,1,4,5,6,7,11,12,13,14,15)$$

(e) Give the dual of $(A+BC+AB)$

Q.7 (a) What is the difference between Packet switching and message switching technique?

(b) Expand the following terminologies:

(i) TDMA

(ii) WLL

(c) What is the utility of Cyber law?

(d) What do you understand by cookies

(e) The Reliance Info Sys has set up its Branch at **Srinagar** for its office and web based activities. It has 4 Zone of buildings as shown in the diagram:

Zone Z

Zone Y

Zone X

Zone U

Center to center distances various blocks

Zone X to Zone Z	40 m
Zone Z to Zone Y	60 m
Zone Y to Zone X	135 m
Zone Y to Zone U	70 m
Zone X to Zone U	165 m
Zone Z to Zone U	80 m

Number of Computers

Zone X	50
Zone Z	130
Zone Y	40
Zone U	15

- (e1) Suggest a most suitable cable layout of connections between the Zones and topology. 1
- (e2) Suggest the most suitable place (i.e., Zone) to house the server of this organization with a suitable reason, with justification. 1
- (e3) Suggest the placement of the following devices with justification: 1
 (1) Repeater (2) Hub / Switch
- (e4) The organization is planning to link its head office situated in Mumbai at the offices at Srinager. Suggest an economic way to connect it; the company is ready to compromise on the speed of connectivity. Justify your answer. 1
- (f) What is the difference between the LAN and MAN? 2

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