

Sample Paper – 2014
Class – XII
Subject – Computer Science

Time allowed : 3 Hours

Maximum Marks : 70

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

1. (a) Differentiate between a global variable and a local variable. Also give suitable example in C++. 2

2. (b) Name the Header file(s) that shall be needed for successful compilation of the following C++ code

```
void main()
{
    char st[20];
    gets(st);
    if(isaplha(st[0])
        cout<<"Starts with alphabet";
    else
        cout<<strlen(st);
}
```

1

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

```
#include<iostream.h>
#define SIZE =10
void main()
{
    int a[SIZE]={10,20,30,40,50};
    float x=2;
    SIZE=5;
    for(int i=0;i<SIZE;i++)
        cout<<a[i]%x;
}
```

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

```
#include<iostream.h>
#include<string.h>
struct Student
{
    int rno;
    char name[20];
};
void main()
{
    student a[2]={1,"Amit"},{2,"Sumit"};
    for(int i=0;i<2;i++)
    {
```

```

        cout<<"\n Rno"<<a[i].rno;
        cout<<"\n Name ";
        for(int j=0;j<strlen(a[i].name);j++)
            cout<<a[i].name[j]<<" ";
    }
}

```

(e) Find the output of the following program

2

```

#include<iostream.h>
void Modify(int &a,int b=10)
{
    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
        Modify(x,3);
}
void main()
{
    Disp(3);
    Disp(4);
    Modify(2,20);
}

```

(f) In the following C++ program , fill in the blanks for the statement1 with the help of random function , if the number generated by the random number is supposed to be between the range of 20-2000

2

```

#include<iostream.h>
#include<stdlib.h>
void main()
{
    int r;
    randomize();
    r=_____//statement 1
    cout<<r;
}

```

(g) Define typedef with a suitable example.

2

2. (a) Differentiate between a default and a parameterized constructor in context of class and object . Give suitable example in C++. 2

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

```
class Computer
{
```

```
    char C_name[20];
```

```
    char Config[100];
```

```
    public:
```

```
        Computer(Computer &obj); // function1
```

```
        ~Computer();           //function 2
```

```
};
```

(i) Write the statement(s) which will invoke the function 1.

(ii) Name the specific feature of the class shown by function 2. Also write the time of its invoke.

(c) Define a class Shop in C++ with the description given below : 4

private members

name array of 40 characters

address array of 40 characters

type of item array of 3X20 characters

availqty array of 3 integers

totalqty array of 3 integers

public members

init() function to ask and store the values of address ,type of items , availqty & totalqty.

purchase() function to ask the qty purchased and type of item from the user and updates the totalqty and avialqty accordingly .

for example : if the type of items available in the shop are : "Cosmetic" , "Food Products" , "Medicines" . And the shop keeper purchase the "Cosmetic" item then update the availqty and totalqty of the "Cosmetic" item.

display() function to display the details of the item in the following format :

Name : <SHOP NAME >

Address :<ADDRESS >

Items : <Type of Item 1> <Type of Item 2> <Type Of item 3>

Balance Stock : <avialqty> <avialqty> <avialqty>

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

```
class Goods
```

```
{
```

```
    int id;
```

```
    protected :
```

```
    char name[20];
```

```
    long qty;
```

```

        void Incr(int n);
        public :
        Goods();
        ~Goods();
        void get();
};
class Food_products : protected Goods
{
    char exp_dt[10];
    protected :
    int id;
    int qty;
    public :
    void getd();
    void showd();
};
class Cosmetics : private Goods
{
    int qty;
    char exp_date[10];
    protected :
    int id;
    public :
    ~Cosmetics();
    Cosmetics();
    void show();
};

```

- (i) Name the all protected members of class Food_products.
 - (ii) Name the member functions accessible through the object of class Food_products.
 - (iii) From the following, Identify the member function(s) that cannot be called directly from the object of class Cosmetics
 - show()
 - getd()
 - get()
 - (iv) If the class cosmetics inherits the properties of food_products class also, then name the type of inheritance.
3. (a) Write a function in C++ which accepts a character array and its size as an arguments and reverse that array without using second array and library function.
 Example : if the array is having
 "Computer Science"
 Then after reversal it should rearranged as
 "ecneicS retupmoC"

- (b) An array A[13][14] is stored in the memory along the column with each element occupying 4 bytes. Find out the Base address and address of the element A[3][7] if the element A[4][4] is stored at the address 1300. 4
- (c) Write a function in C++ to delete a node containing names of student , from a dynamically allocated stack of names implemented with the help of following structure : 3
- ```

struct student
{
 char name[20];
 student *next;
};

```
- (d) Consider the following portion of a program , which implements names queue for Books . Write the definition of function Insert(), to insert a new node in the queue with required information 3
- ```

struct Book
{
    char names[4][20];
};
class QueueofBooks
{
    Book Q[10];
public :
    int front ,rear;
    QueueofBooks()
    {
        front=rear=-1;
    }
    void Insert();
    void Delete();
};

```
- (e) Evaluate the following postfix expression using a stack and show the contents of stack after execution of each operation: 2
- False,True , False , True ,Not, Or, True , Or, Or ,And
4. (a) Observe the program segment given below carefully and fill in the blanks marked as statment1 and statement2 using write() and remove() functions for performing the required task. 1
- ```

#include<fstream.h>
class Emp
{
 int Eno;
 char name[20];
public :
 //function which will delete the data of a specific employee

```

```

 void deleteRec(int Eid);
};
void Emp::deleteRec(int Eid)
{
 fstream file;
 file.open("Emp.dat",ios::in|ios::out|ios::binary);
 ofstream ofile("temp.dat");
 while(file)
 {
 file.read((char *)this,sizeof(eobj));
 if(this->Eno !=Eid)
 _____//statement1
 }
 _____//statement 2
 rename("temp.dat","emp.dat");
}

```

- (b) Write a function in C++ which will print the text file "story.txt" in reverse form .  
 For example , if the file is having 2  
 computer science is my best subject.  
 then the output will be tcejbus tseb ym si eceics retupmoc.
- (c) Write a function in C++ to transfer a particular type of stock from the file "stock.dat" to another file "Site.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 "stock.dat" file and addition in the "site.dat" file.
5. (a) What do you understand by DDL and DML. Write at least two DDL and DML coomands. 2
- (b) Consider the following tables Employee and salary. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii) 6

**Table : Employee**

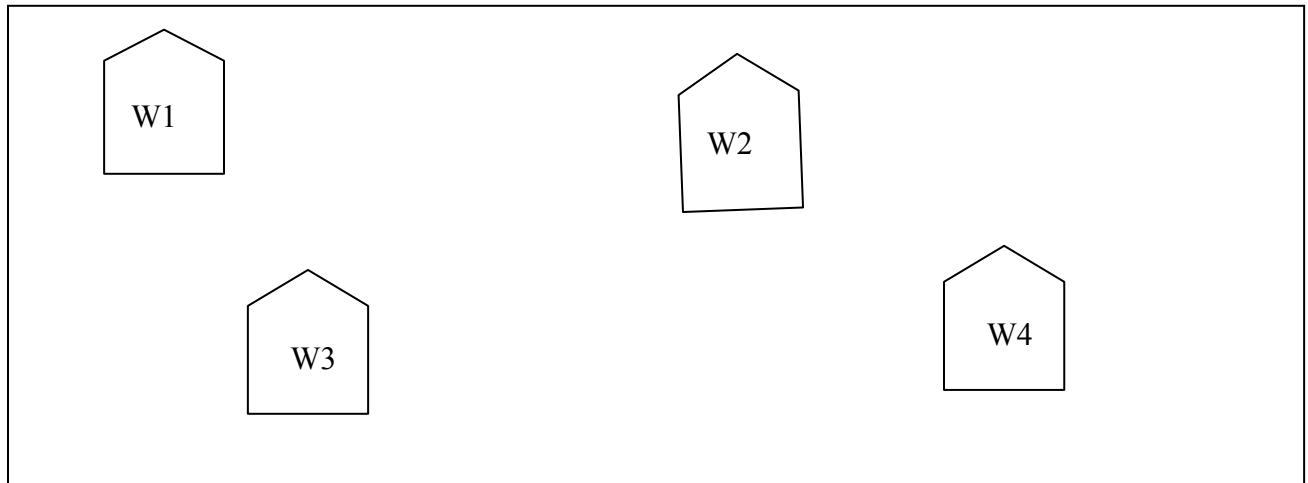
| Eid | Name          | Deptid | Qualification | Sex |
|-----|---------------|--------|---------------|-----|
| 1   | Deepali Gupta | 101    | MCA           | F   |
| 2   | Rajat Tyagi   | 101    | BCA           | M   |
| 3   | Hari Mohan    | 102    | B.A           | M   |
| 4   | Harry         | 102    | M.A           | M   |
| 5   | Sumit Mittal  | 103    | B.Tech        | M   |

|   |       |     |        |   |
|---|-------|-----|--------|---|
| 6 | Jyoti | 101 | M.Tech | F |
|---|-------|-----|--------|---|

**Table : Salary**

| Eid | Basic | DA   | HRA  | Bonus |
|-----|-------|------|------|-------|
| 1   | 6000  | 2000 | 2300 | 200   |
| 2   | 2000  | 300  | 300  | 30    |
| 3   | 1000  | 300  | 300  | 40    |
| 4   | 1500  | 390  | 490  | 30    |
| 5   | 8000  | 900  | 900  | 80    |
| 6   | 10000 | 300  | 490  | 89    |

- (i) To show the name of employees department wise.
- (ii) To list the names of those employees only whose basic is greater than 3000.
- (iii) To print the net salary from salary table where as net salary is calculated as basic+da+hra+bonus
- (iv) To increase the bonus of all employees with 200.
- (v) Select name from employee where eid=(select eid from salary where basic= (select max(basic) from salary));
- (vi) select Avg(basic) from salary where bonus >40;
- (vii) Select count(\*) from employee where sex='F';
- (viii) select name from employee where qualification like '%Tech'
6. (a) State and prove the absorption law algebraically. 2
- (b) Convert the following expression into Canonical SOP form  
 $x+yx+xz$  2
- (c) Write the dual of the Boolean Expression  $A+B'C=1$  1
- (d) Obtain the simplified form of a Boolean expression using K-Map.  
 $F(x,y,z)=\Sigma(2,3,4,7)$  3
7. (a) What are cookies. 1
- (b) Define the term Bandwidth. Give unit of Bandwidth. 1
- (c) Expand the following terminology :  
 (i) Mbps (ii) GSM 1
- (d) Define the term Firewall. 1
- (e) A company in Reliance has 4 wings of buildings as shown in the diagram:



Center to center distances between various Buildings:

|          |      |
|----------|------|
| W3 to W1 | 50m  |
| W1 to W2 | 60m  |
| W2 to W4 | 25m  |
| W4 to W3 | 170m |
| W3 to W2 | 125m |
| W1 to W4 | 90m  |

Number of computers in each of the wing:

|    |     |
|----|-----|
| W1 | 150 |
| W2 | 15  |
| W3 | 15  |
| W4 | 25  |

Computers in each wing are networked but wings are not networked. The company has now decided to connect the wings also.

- i) Suggest a most suitable cable layout of the connection between the wings. [1]
- ii) Suggest the most suitable wing to house the server of this company with a suitable reason. [1]
- iii) Suggest the placement of the following devices with justification: [1]
  - 1) Internet connecting device/modem
  - 2) Switch / Hub
- iv) The company is planning to link its head office situated in India with the offices at Reliance. Suggest an economic way to connect it; the company is ready to Compromise on the speed of connectivity. Justify your answer. [1]