SAMPLE PAPER- 1 (solved)
Computer Science
Class – XII

Time allowed 3 hours | Maximum Marks: 70

General Instructions:

(i) ***All*** *questions are compulsory.*
(ii) Programming Language : C++
(iii)*Marks are given at the end of each question.*

1.

(a) What is data abstraction? Give example (2)

(b) Name the header file that shall be needed for successful compilation of the following C++ Code (1)

```
void main()
{
  char string [10];
  gets(string);
  srtcat(string,"SARA");
  puts(string);
}
```

(c) Rewrite the following C++ program code after removing the syntax error(s). Underline each correction. (2)

```
#include <iostream.h>
class Train
 {
   int trainnumber;
   char TrainName[25];
   public:
   void Add()
   {
     cin >> trainnumber;
     gets(TrainName);
   }
  void display()
 {
     cout<<trainnumber <<":"<<TrainName<<end;
  }
 };
 void main()
 {
   Train T;
   Add.T();
   display.T();
 }
```

(d) Explain the use of inline function in C++ with the help of an example (2)

(e) Write a C++ program to explain working of call-by-value method of a function invoking (3)

(f) Write the C++ program to find whether two given strings contain equal number of characters. (2)

2.

(a) What is default constructor? How is it different from destructor? (2)

(b) Answer the following questions based on the below given code (4)

```
class Book
{
   char Book_Name[20];
   char Author[20];
   int pages;
   public:
      void reading();
      void display();
};
class Textbook:private book
{
   int chapters;
   int examples;
   protected:
      int std;
   public:
      void readingTextbook();
      void DisplayTextbook();
};
class Computerbook:public Textbook
{
   char content[20];
   public:
      void readingCSBook();
      void DisplayCSBook();
}
```

i. Name the members, which can be accessed from the member function of class ComputerBook.

ii. Name the member, which can be accessed by an object by an object of class Textbook.

iii. Name the members, which can be accessed by an object of class ComputerBook.

iv. What will be the size of an object (in bytes) of class Computer Book.

(c) Define a class named House in C++with the following descriptions (4)

Private members

House_no	integer [ranges 10-100]
Name	array of characters (string)
HouseType	of charterer type
Cost	float

Public members

Read_Input()	function to read an object of House type
Show()	function to show the details of an object.
Draw_nos()	function to choose and display the details of 2 houses selected randomly from array of 10 objects of type house. Use the random function to generate the house number to match House_no from an array

(d) In the following program, find the correct possible output from the given options (2)

```
#include <iostream.h>
#include <stdlib.h>
void main()
{
  randomize();
  char color[][20] = ["White","Green","Blue","Yellow"];
  int paint;
  for(int i=0;i<=2;i++)
  {
    paint = random(2) + 1;
    cout<<color[paint]<<";";
  }
}
```

Output:

i. Blue : Green : Yellow
ii. White : Blue : Green
iii. Blue : White : Yellow
iv. White : Blue : Yellow

3.

(a) Distinguish between LIFO and FIFO list? (2)

(b) What is the output of the following program (assume all required header files are include in the program) (2)

```
void main()
{
  int array[] = (1,2,3,4);
  int *arrayptr = arr;
  int value = *arrayptr;
    cout<<value<<'\n';
    value = *arrayptr++;
    cout<<value<<'\n';
    value = *arrayptr;
    cout<<value<<'\n';
    value = *++arrayptr;
    cout<<value<<'\n';
}
```

(c) An array MAT [20][10] 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 MAT [10][5], if an element MAT[5][7] is stored at the memory location 1000. (3)

(d) Write a function to check if the passed array of 20 integers is sorted or not. The function should return 1 if arranged in ascending order, -1 if arranged in descending order, 0 if it is not sorted. (3)

(e) Write a function in C++ to delete a node containing employee information from a dynamically allocated stack to employee implemented with the help of the following structure (4)

```
struct Emp
{
   int EmpId;
   char Name[25];
   Emp *Next;

}
```

4.

(a) Observe the below program segment carefully and fill the blank as line 1 using fstream function for performing the required task. (1)

```
#include (fstrem.h>
class library
{
   long no;
   char bookname[20];
   int quantity;
   public:
      void accept(int)
         // user to enter the data
      void show()
         // display the data
      void buy(int qty)
      {
         quantity += qty;
      }
   long Getno()
   {
      retun no;
   }
};
void buybook(long Pno,int Pqty)
{
   library L;
   fstream File;
   File.open("Stock.dat",ios::binary|ios::in|ios::out);
   int position = 1;
   while (position == -1 && File.read((char *)&L.sizeof(L))
   {
      if(L.Getno() == Pno)
```

```
        {
          L.buy(pqty);
          position = File.tellg()-sizeof(L);
          ------------------
          // line 1 : to place teh file pointer to the required position
          File.write((char *) &L.sizeof(library));
        }
        if(position == -1)
        cout << " No updation doen as required no not fount:";
        File.close();
      }
    }
```

(b) Write a function in C++ to read the content of a text file "News.TXT" and display all those lines which are either starting with 'S' or starting with 'W'. (2)

(c) Distinguish between ifstream class and ofstream class (3)

5.

(a) What is normalization and why is it needed? (2)

(b) Differentiate between INSERT command and UPDATE command (2)

(c) Consider the following tables EMPLOYEE and SALARY and write SQL commands for the questions (i) to (iv) (4)

Table EMPLOYEE

EMPID	Name	DEPT	Gender	Experience
1001	Arun	Electrical	M	10
1002	Subha	Accounts	F	15
1003	Balaji	IT	M	5
1004	Geetha	Admin	F	10
1005	George	Admin	M	5
1006	S.Subha	IT	F	10
1008	Suresh	Electrical	M	7
1009	Priya	HR	F	10

Table SALARY

EMPID	Basic	Allowance	DA
1001	15000	1500	10000
1002	20000	2500	15000
1003	15000	1500	10000
1004	20000	2000	15000
1005	15000	1500	10000
1006	20000	2000	15000
1008	13000	1500	7500
1009	20000	1500	15000

(i) Display the name of all employees who are in electrical department having more than 8 years of experience from the employee table.

(ii) Display the average salary of all the employees in IT department using both the above tables[hint : salary = basic + DA + Allowance]

(iii) Display the minimum DA for the female employee

(iv) Display the name, basic, DA of the employee from the HR department.

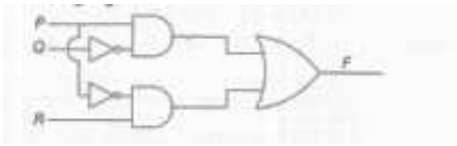
6.

(a) Express $P + \overline{Q}R$ in canonical SOP form (1)

(b) Prepare the truth table for the following Boolean algebra expression (2)

$\overline{X}\,\overline{Y} + \overline{X}Y$

(c) Write the equivalent Boolean expression for the following logic circuit (2)



(d) Reduce the following expression using K-map (3)

$F(W, X, Y, Z) = \sum(0,4,8,12)$

7.

(a) What is meant by Bandwidth (1)

(b) Write about telnet service? (1)

(c) Differentiate between virus and worm in the computer (1)

(d) Write the full form of the following (1)

(i) FTP

(ii) XML

(e) Difference between internet and intranet (1)

(f) Define cookies? (1)

(g) Shreyas Academy has setup its new branch in Chennai for its office and web based activities. It has four offices vof building as shown in the diagram (4)

Center to center distance between various blocks are given below

Office 1 A to Office 2	100 m
Office 2 to Office 3	140 m
Office 3 to Office 1	250 m
Office 3 to Office 4	160 m
Office 1 to Office 4	350 m
Office 2 to Office 4	180 m

Number of computer in each office

Office 1 = 50

Office 2 = 20

Office 3 = 180

Office 4 = 30

(i) Suggest the most suitable cable layout of connections between the offices and topology

(ii) Suggest the most suitable place to house the server of this organization with a suitable reason.

(iii) Suggest the placement of the following device with justification Repeater and Hub

(iv) The academy is planning its head office situated in Bangalore with its office in Chennai. Suggest an economic way to connect it.