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

Solutions

1.

(a) Abstraction refers to the act of representing essential features without including the background details or explanations.
Example -

```
# include <iostream>
int main()
{
    cout << "Hello"<<endl;
    return 0;
}
```

Here, you don't need to understand how **cout** displays the text on the user's screen. You need to only know the public interface and the underlying implementation of cout is free to change.

(b) For gets and puts we need to use <stdio.h> header file and for strcat we need to use <string.h> header file.

(c)
```
# 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();
                    Actual code is F.Add();
      display.T();
                    Actual Code is F.diaplay();
    }
```

(d) A function is defined as being inline, if its implementation is substituted into the code, where the function call was made inline expansion makes a program execution faster because the overhead of a function call and return is eliminated. The inline functions are defined as follows:

```
Inline function_header
{
        Function bdy;
}
Example:
        Inline double cube(double x)
        {
                Return(x*x*x);
        }
```

(e)
```
#include <iostream.h>
#include < conio.h>
int main()
{
  clrscr();
  void Valuechange(int)
  int initialValue = 20;
  cout << "InitialValue:"<<initialvalue<<"\n";
  Valuechange(initialValue);
  cout << "Value Change() is over::"<<initialValue<<"\n";
  return 0;
}
void Valuechange(int a)
{
  a=30;
  cout<<"Value of initial in function valuechange:"<<a<<"\n";
  return;
}
```

(f)
```
#include <iostream.h>
#include <string.h>
#include <conio.h>
int main()
{
  clrscr();
  char string a[20],string b[20];
  cout <<"Enter string"\n";
  cin.getline(string a,20);
  cin.getline(string b,20);
  if(strlen(string a) == strlen(string b))
    cout <<"\n Both string contain equal number"
                <<"of characters"<<"\n";
  else
    cout <<"\n Both string contain different number"
                <<"of characters"<<"\n";
```

```
    return 0;

}
```

2.

(a) A constructor that accepts no parameters is called default constructor. A destructor has a the same name that of constructor function, preceded with a tild sign(~). It gets invoked every time an object goes out of scope. It is used to destroy objects.
Hence default constructor used for initialization and destructor used for destroy of an object

(b)

i. Data member – chapter and content
Data function – ReadingTextbook(), displayTextbook(),readingCSBook(),displayCSBook()

ii. Member function – readingTextbook(),DisplayTextbook()

iii. Member functions – readingTextbook(),DisplayTextbook(),readingCSBook(),displayCSBook()

iv. 68 bytes

(c) Assume that name of array of type House storing 10 objects is Arra.

```
Class House
{
  int House_no;
  char Name[35];
  char HouseType;
  float cost;
  public:
    void Read_Input()
    {
      cout <<"\n Enter the House Number:" :
      cin >> House_no;
      cout <<"\n Enter the House Name:";
      gets (Name);
      cout <<"\n Enter the House Type:";
      cin>> HouseType;
      cout<<"\n Enter the House cost:";
      cin>>cost;
    }
    void show()
    {
      cout<<"\n The No. of the House"<<House_no;
      cout<<"\n The name of the House"<<Name;
      cout<<"\n The Type of the House"<<HouseType;
      cout<<"\n The Cost of the House"<<cost;
    }
    void Draw_nos(House *Arra);
};
void House::Draw_nos(House Arra[10])
```

```
{
  int no1, no2,i;
  randomize();
  no1 = random(991) + 10;
  no2 = random(991) + 10;
  for(i=0;i<10;i++)
  if(Arra[i].House_no == no1) | |(Arra[i].House_no == no2))
  Arra[i].show();
}
```

(d) Blue : Green : yellow and White : Blue : Yellow

3.

(a) LIFO is short for Last In, First Out, while FIFO is an acronym for First In, First Out
Queue
Queue is a ordered collection of items.
Items are deleted at one end called 'front' end of the queue.
Items are inserted at other end called 'rear' of the queue.
The first item inserted is the first to be removed (FIFO).
Stack
Stack is a collection of items.
It allows access to only one data item: the last item inserted.
Items are inserted & deleted at one end called 'Top of the stack'.
It is a dynamic & constantly changing object.
All the data items are put on top of the stack and taken off the top
This structure of accessing is known as Last in First out structure (LIFO)

(b) 1
1
2
3

(c) Base Address B
Number of rows M = 20
Element size W = 4
Ir, Ic =0
array in coloumn major order formula
Address of Mat[I][J] = B + W(M(J - Ic) + (I - Ir))
Mat[5][7] = 1000
1000 = B + 4(20(7 - 0) + (5 - 0)
1000 = B + 4(20(7) + 5)
1000 = B + 4(145)
1000 = B + 580
B = 1000 - 580 = 420
address of Mat[10][5]
= 420 + 4(20(5 - 0) + (10 - 0))
= 420 + 4(20(5) + 10)
= 420 + 4(110)
= 420 + 440 = 860

(d) Assume that header files are included
int check_sort(int x[20]);

```
{
   int result = 0;
   for(int i =0;i<19;i++)
   {
      if(x[i] < x[i+1])
         result = 1;
      else
      {
         result =0;
         break;
      }
   }
   if(result == 1)
      return result;
   for(i=0;i<19;i++)
   {
      if(x[i] > x[i+1])
         result = 1;
      else
      {
         result = 0;
         break;
      }
   }

   retuen result;
}
```

(e)
```
void POP(Emp *top)
{
   Emp *ptr = top;
   if(ptr == NULL)
      cout << "Underflow!!";
   else
   {
      cout << "Element being deleted is \n";
      cout << "EmpId:"<<top->EmpId;
      cout << "Name:"<< top->Name;
      top = top -> Next;
      delete ptr;
   }
}
```

4.

(a) File.seekp(position);

(b)
```
void show()
{
   char str[150];
   ifstream fcin("News.TXT");
   fcin.getline(str,100);
```

```
    while(fcin)
    {
      if(str[0] == 'S' || str[0] == 'W')
      {
        cout << str;
      }
      fcin.getline(str,100);
    }
    fcin.close();
}
```

(c)

NO	Ifstream	Ofstream
1	This class is derived from istream class	This class is derived from ostream class
2	It associates an input buffer with a file	It associates an output buffer with a file
3	It is used to read data from a file	It is used to write data onto a file

5.

(a) The normalization is the process of transformation of the conceptual schema of the database into a computer representable form.
Most databases grow by adding new relations and relationships, the data may be used in new ways. Information may undergo series of updations. In such situations, the performance of a database is entirely dependent upon its design.
A bad database design may lead to certain undersirable things like repetition of information, inability to represent certain information, loss of information. The normalization process helps one attain good database design thereby avoiding these undesirable things.

(b) INSERT command is used to add new records into the table while UPDATE command is used to change some or all the value of the existing record in the table.

(c)

(i) SELECT name FROM EMPLOYEE WHERE dept = “Electrical” AND experience > 8.

(ii) SELECT AVG (basic + allowance + DA) FROM salary WHERE salary.EMPID IN(SELECT EMPID FROM employee WHERE dept =”IT”.

(iii) SELECT MIN(DA) FROM salary where salary.EMPID IN(SELECT EMPID FROM Employee WHERE Gender =’F’);

(iv) SELECT NAME, Basic, DA FROM Employee, Salary where Dept = HR and Empoyee.EMPID = Salary.EMPID;

6.

(a)

$P + \overline{Q}R$

$P(Q + \overline{Q})(R + \overline{R})$

$(PQ+P\overline{Q})(R+\overline{R})+P\overline{Q}R+\overline{P}\overline{Q}R$

$R(PQ+P\overline{Q})+\overline{R}(PQ+P\overline{Q})+P\overline{Q}R+\overline{P}\overline{Q}R$

$PQR+P\overline{Q}R+PQ\overline{R}+P\overline{Q}\overline{R}+P\overline{Q}R+\overline{P}\overline{Q}R$

NOW WE REMOVE THE DUPLICATE TERM

$\Rightarrow PQR+P\overline{Q}R+PQ\overline{R}+P\overline{Q}\overline{R}+\overline{P}\overline{Q}R$

(b) As $\overline{X}\,\overline{Y}+\overline{X}Y$ is a 2- variable expression. Its truth table is as follows:

X	Y	$\overline{X}$	$\overline{Y}$	$\overline{X}\,\overline{Y}$	$\overline{X}Y$	$\overline{X}\,\overline{Y}+\overline{X}Y$
0	0	1	1	1	0	1
0	1	1	0	0	1	1
1	0	0	1	0	0	0
1	1	0	0	0	0	0

(c) $F=(P.\overline{Q})+(\overline{P}+R)$

(d) Given function

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

$F=m_0+m_4+m_8+m_{12}$

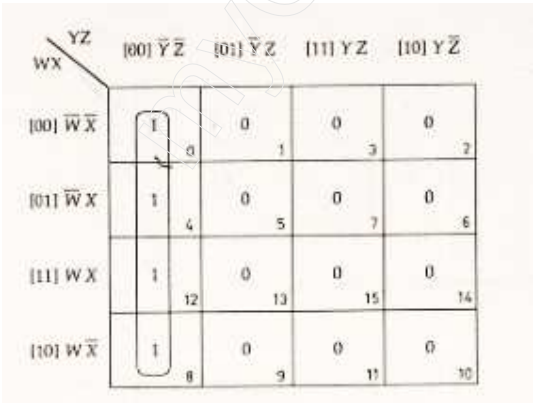
$m_0=0000=\overline{W}\,\overline{X}\,\overline{Y}\,\overline{Z}$

$m_4=0100=\overline{W}X\overline{Y}\,\overline{Z}$

$m_8=1000=W\overline{X}\,\overline{Y}\,\overline{Z}$

$m_{12}=1100=WX\overline{Y}\,\overline{Z}$

The mapping the given function on a K-map we get



Only 1 group is here a Quard($m_0+m_4+m_{12}+m_8$)

Reduce the expression for this quard is $\overline{Y}\overline{Z}$ as while moving across the Quard W and X are removed because these are changing their states from complemented to un-complemented or vice versa.

Final reduced expression is $-\overline{Y}\overline{Z}$

7.

(a) Bandwidth means the capacity of a medium to transmit a signal. It is the bandwidth that determines the amount of information that can be transmitted for a distance.

(b) The telnet is an internet facility that facilitates remote login. Remote login is the process of accessing a network from a remote place without actually being at the actual place of working.

(c) The main difference between virus and worm is the method by which they reproduce and spread. A virus is dependent upon a last file of boot sector and the transfer of files between machines to spread, while a worm can run completely independent and spread itself through network connection.

(d)

(i) FTP – File Transfer Protocol

(ii) XML – Extensible Markup Language

(e) The internet is a worldwide network of computer networks. Internet uses a set of protocols called TCP/IP. It is not owned by anybody. Intranet is a network which is privately owned network used for their internal sharing of data and files.

(f) Cookies are messages that a web server transmits to a web browser so that the web server can keep track of the user's activity on a specific website.

(g)

i) We can use Bus topology

ii) The most suitable place to house the server is Office 3 as it has most number of computers. It will save cabling cost and most of the traffic will be local.

iii) As per layout suggested we need to install separate repeaters as each of the office will have hub installed that acts like a repeater. Each of the office requires a hub to connect several computers in the office.

iv) An economic way o connecting is dial-up or broadband as it can connect two computers at an economic rate through it provides lesser speed than other expensive methods.

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