XII CBSE - BOARD - MARCH - 2018

CODE (91) SET - 4

Date: 23.03.2018 **COMPUTER SCIENCE - SOLUTIONS**

SECTION - A
[Only for Candidates, who adopted for C++]

1. (a)

Ans. (i) else : Keywords
(ii) Long : Keywords
(iii) 4Queue : Identifiers
(iv) _count : Identifiers

Topic:C++ Revision Tour_; Sub-Topic:Tokens_XII-CBSE Board Exam__Computer Science

(b)

Ans. fstream . h
string.h

Topic:C++ Revision Tour_; Sub-Topic:Arrays__XII-CBSE Board Exam__Computer Science

(c)

Ans.
```
typedef int Count;
void main ( )
{
   Count  C;
   cout<<"Enter the count:";
   cin>>C;
   for (int K = 1 ; K<=C; K++)
      cout<< C << "*" << K <<end1;
}
```

Topic:C++ Revision Tour__; Sub-Topic: -C++ Basics_XII-CBSE Board Exam__Computer Science

(d)

Ans. 35 & 4

38 # 3

38 # 9

Topic:C++ Revision Tour_; Sub-Topic:Functions__XII-CBSE Board Exam__Computer Science

(e)

Ans. 40 : 55 : 46 : 61

Topic:C++ Revision Tour_; Sub-Topic:Arrays__XII-CBSE Board Exam__Computer Science

(f)

Ans. 13@10@11@10@

Topic:C++ Revision Tour_; Sub-Topic:Arrays__XII-CBSE Board Exam__Computer Science

2. (a)

Ans.
```
void Execute (char A, int B) ;      // Function 1
void Execute (int A, char B) ;      // Function 2
void Execute (int P=10) ;           // Function 3
```

Topic:Functions Overloading_; Sub-Topic:Functions Overloading_XII-CBSE Board Exam__Computer Science

(b)

Ans. (i) Single Inheritance

(ii) S.display ( );

S.First : : display ( );

Topic:Classes and object_; Sub-Topic:Functions in a class_XII-CBSE Board Exam__Computer Science

(c)

Ans.
```
Class CONTAINER
{   float Radius, Height;
    int Type ;
    float Volume ;
    void CalVolume(float Radius, float Height, int n)
    {Volume = (3.14*Radius*Radius*Height)/n;
    }
    void CalVolume(float Radius, float Height)
    {Volume = 3.14*Radius*Radius*Height;
    }
```

```
public :
    void GetValues( )
    {cout << "Enter Radius";
     cin >>Radius;
     cout<<"Enter Height";
     cin>>Height;
     cout<<"Enter Type (1 for cone and 2 for cylinder)";
     cin>>Type;
     switch(Type)
      {case 1: CalVolume(Radius, Height, 3);
               ShowAll( );
               break;
       case 2: CalVolume(Radius, Height);
               ShowAll( );
               break;
      }
}
void ShowAll( )
{cout<< "Radius : "<<Radius;
 cout<<"Height :"<< Height;
 cout << "Volume : "<<Volume;
}
};
```

Topic:Classes and object_; Sub-Topic:Functions in a class_XII-CBSE Board Exam__Computer Science

(d)

Ans. (i) Multiple Inheritance

(ii) DD,MM,YYYY, Title[30], Name[20]

(iii) Start ( ), View( ), Initiate( ), Display( ), Enter( ), Show( )

(iv) Schedule ( ), Course( ), Teacher( )

Topic:Inheritance : Extending Classes_; Sub-Topic:Multiple inheritance__XII-CBSE Board Exam__Computer Science

3. (a)

Ans.
```
void sum EO(int VALUES [ ], int N)
{
    int S1 = 0;
    int S2 = 0;
    for(int i = 0 ; i < N ; i + +)
```

```
        { if(VALUES[i]% 2 = = 0)
            {S1 + = VALUES [i];}
          else
            {S2 + = VALUES [i];}
          }
      cout << "Sum of even values"<< S1 << endl ;
      cout << "Sum of odd values"<< S2 << endl ;
}
```

Topic:Arrays_ ; Sub-Topic:One-dimensional arrays_XII-CBSE Board Exam__Computer Science

(b)

Ans.
```
void UpperHalf(int Mat [4][4])
{for (int  i = 0; i < 4;  i + +)
        { for (int j = 0; j < 4; j ++)
            { cout << Mat [i] [j] <<  "    " ;
            }
        cout << endl;
        }
}
```

Topic:Arrays_ ; Sub-Topic:Two-dimensional arrays_XII-CBSE Board Exam__Computer Science

(c)

Ans. W - 2

N - 20

M - 15

Loc(Data[15][10]) = 15000

Row major formula :

Loc(Data[i][j]) = Base(Data) + W*(M * i + j)

Loc(Data[15][10]) = Base(Data) + 2*(15 * 15 + 10)

15000 = Base(Data) + 2*(225 + 10)

= Base(Data) + 2 * 235

= Base(Data) + 470

Base(Data) = 15000 – 470

= 14530

Loc(Data[10][5]) = 14530 + 2 * (15 * 10 + 5)

= 14530 + 2 * (150 + 5)

= 14530 + 2 * 155

= 14530 + 310

= 14840

Topic:Arrays_ ; Sub-Topic:Two-dimensional arrays_XII-CBSE Board Exam__Computer Science

(d)

Ans.
```
void QUEUE : : AddPacket( )
{     Packet *temp = new Packet;
        if(temp==NULL)
      {
        cout<<"Overflow"<<endl;
      }
      cout<< "Enter PID";
      cin >> temp->PID;
      int n = temp->PID;
      temp -> Link=NULL;
      / / for first node
      if(Front == NULL)
      {
        Front = Rear = temp;
      }
      else
      {
        Rear->Link = temp;
        Rear = temp;
      }
      cout<< n << "has been inserted successfully."<<endl;
      / /display
      if(Front= =NULL)
      {
        cout<< "Underflow."<<endl;
        return;
      }
      else
{ temp = Front;
      / /will check until NULL is not found
      while(temp)
      {
        cout << temp -> PID << "  ";
        temp = temp -> Link;
      }
      cout<<endl;
 }
```

```
}
void QUEUE : : DeletePacket ( )
{
    if(Front = = NULL)
    {
        cout<< "underflow"<< endl;
        return;
    }
    cout << Front -> PID <<" is being deleted "endl;
    if (Front = = Rear) / / if only one node is there
        Front = Rear = NULL;
    else
        Front = Front -> Link;
    / /display
    if(Front= =NULL)
    {
        cout<< "Underflow."<<endl;
        return;
    }
    else
{
    Packet *temp=Front;
    / / will check until NULL is not found
    while(temp)
    {
        cout << temp -> PID << "  ";
        temp = temp -> Link;
    }
    cout<<endl;
  }
}
```

Topic:Linked Lists, Stacks and Queues_; Sub-Topic: Queue_XII-CBSE Board Exam__Computer Science

(e)

Ans.

Symbols	Stock	Expression
U		U
*	*	U
V	*	UV
+	+	UV*
C	+(	UV*
W	+(	UV*W
–	+(–	UV*W
Z	+(–	UV*WZ
)	+	UV*WZ–
/	+/	UV*WZ–
X	+/	UV*WZ–X
	+	UV*WZ–X/
		UV*WZ–X/+

Postfix expression : UV*WZ–X/+

Topic:Linked Lists, Stacks and Queues_; Sub-Topic: Application of stacks_XII-CBSE Board Exam__Computer Science

4. (a)

Ans.

```
void HashDisplay( )
{
ifstream fin("MATTER.TXT"); / /opening text file
int size;
char ch;
fin.seekg(0, ios : : end);
size = fin.tellg( );
fin.seekg(0, ios : : beg);
for(int i=0; i < size; i++)
{
fin.get(ch);
cout << ch << "#";
}
fin.close( );
}
```

Topic:Data File handling_; Sub-Topic:Basic operations on files_XII-CBSE Board Exam__Computer Science

(b)

Ans.
```
void putnot ( )
{
        cout << NOT << "              ";
}
void Total Teachers( )
{       fstream f;
        SCHOOLS Stu;
        f.open("SCHOOLS.DAT", ios : : in | ios : : binary);
        cout << "\nTotal no. of Teachers : \n";
        while( ( f.read( (char*) &Stu, sizeof(Stu))) ! = NULL )
        Stu.putnot( );
        f.close( );
}
```

Topic:Data File handling_; Sub-Topic:Basic operations on Binary files_XII-CBSE Board Exam__Computer Science

(c)

Ans. Record : 7

Topic:Data File handling_; Sub-Topic:Basic operations on Binary files_XII-CBSE Board Exam__Computer Science

SECTION C

[For all the candidates]

5. (a)

Ans. (iv) CARTESIAN PRODUCT : VIDEO × MEMBER

Degree : 5

Cardinality : 9

Topic:Database concepts_; Sub-Topic:Relational model__XII-CBSE Board Exam__Computer Science

(b)

Ans. (i) SELECT * FROM TRANSACT WHERE TYPE = 'Deposit'

(ii) SELECT ANO, AMOUNT FROM TRANSACT WHERE MONTH(DOT) = 10;

(iii) SELECT DOT FROM TRANSACT WHERE ANO = 103
ORDER BY DOT DESC LIMIT = 1

(iv) Select A.ANAME, T.ANO, T.DOT FROM ACCOUNT as A
JOIN TRASACT as T ON A.ANO = T.ANO
WHERE T.AMOUNT < = 3000;

(v)

ANO	ANAME
103	AliEReza
105	Simran Kaur

(vi)

ANO
101
103
102

(vii)

ANO	COUNT	MIN(AMOUNT)
101	2	2500
103	2	1000

(viii)

Count	Sum(AMOUNT)
2	5000

Topic:Structured Query language__; Sub-Topic:Various SQL commands and functions_XII-CBSE Board Exam__Computer Science

6. (a)

Ans. X (X+Y) = X

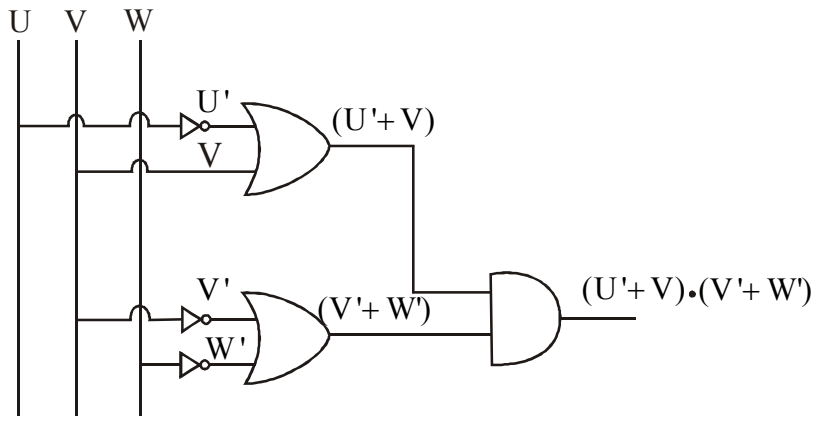
The truth is :

X	Y	XY	$X + X.Y$
0	0	0	0
0	1	0	0
1	0	0	1
1	1	1	1

Topic:Boolean Algebra_; Sub-Topic:Basic theorems of Boolean Algebra__XII-CBSE Board Exam__Computer Science

(b)

Ans.



Topic:Boolean Algebra_; Sub-Topic:Logic circuits_XII-CBSE Board Exam__Computer Science

(c)

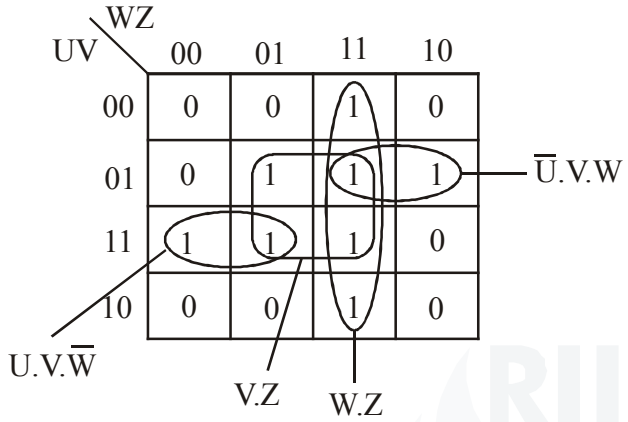
Ans. Output : $\left(\overline{X}+\overline{Y}+Z\right)\left(X+\overline{Y}+\overline{Z}\right)\left(\overline{X}+Y+\overline{Z}\right)\left(\overline{X}+\overline{Y}+Z\right)$

Topic:Boolean Algebra_; Sub-Topic: Canonical expression_XII-CBSE Board Exam__Computer Science

(d)

Ans. $G(U,V,W,Z)=\Sigma(3,5,6,7,11,12,13,15)$

$$=W.Z+V.Z+\overline{U}.V.W+U.V.\overline{W}$$



Topic:Boolean Algebra_; Sub-Topic: -Karnaugh Maps__XII-CBSE Board Exam__Computer Science

7. (a)

Ans. A bus topology is a networking architecture that is linear, usually by using one or more pieces of cable to form a single line, or bus. The Signals sent by one station extend the length of this cable to be heard by other stations.

A star topology is an architecture that includes a central device or hub to connect all stations together. Signals sent by a station must pass through (and are usually regenerated) by these central hubs.

Since the hub sits in the center and all other stations are linked through the hub, the architecture resembles a star.

Advantages of Star Topology

(i) As compared to Bus topology it gives far much better performance, signals don't necessarily get transmitted to all the workstations. A sent signal reaches the intended destination after passing through no more than 3-4 devices and 2-3 links.

(ii) Centralized management. It helps in monitoring the network.

Disdvantages of Star Topology

(i) Too much dependency on central device has its own drawbacks. It it fails whole network goes down.

(ii) The use of hub, a router or a switch as central device increases the overall cost of the network.

Topic:Communication and network concepts_; Sub-Topic: -Network Topologies_XII-CBSE Board Exam__Computer Science

(b)

Ans. (i) Java Script : Client Side Scripting

(ii) ASP : Server Side Scripting

(iii) VB : Client Side Scripting

(iv) JSP : Server Side Scripting

Topic:Communication and network concepts_; Sub-Topic:Web Scripting_XII-CBSE Board Exam__Computer Science

(c)

Ans. (i) SMTP : Simple Mail Transfer Protocol

(ii) VoIP : Voice Over Internet Protocol

(iii) GSM : Global System for Mobile Communication

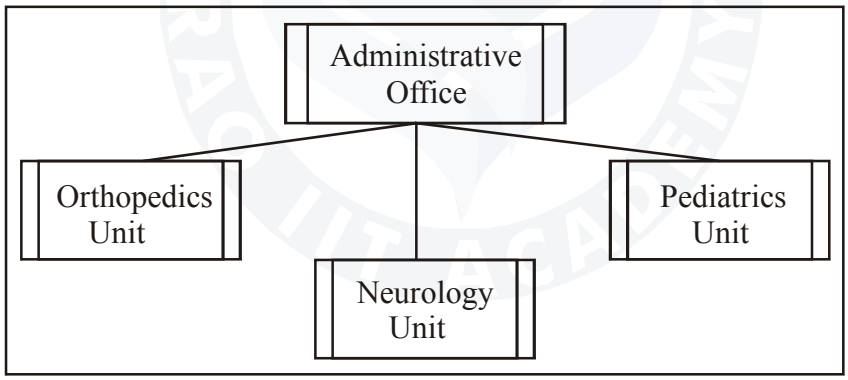
(iv) WLL : Wireless Local Loop

Topic:Communication and network concepts_; Sub-Topic: -Wireless/Mobile Computing__XII-CBSE Board Exam__Computer Science

(d)

Ans. (i) **Administrative office** as this department contains the maximum number of computers thus decreasing the cabling cost for most of the computers as well as increasing the efficiency of the maximum computers in the network.

(ii)



(iii) • **Switch :** Switch would be needed in each of these builsings to interconnect the computers installed within the building.

(iv) Topologies : Star Topology

Network Cable : Coaxial Cable

Topic:Communication and network concepts_; Sub-Topic: -LAN Design_XII-CBSE Board Exam__Computer Science