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

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

(b)
Ans. fstream . h
string . h

(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 <<endl;
}

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

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

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;
    }
};
```cpp
{ 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])
```cpp
{ 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
Ans.

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Stock</th>
<th>Expression</th>
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<tbody>
<tr>
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<td>*</td>
<td>U</td>
</tr>
<tr>
<td>*</td>
<td>*</td>
<td>U</td>
</tr>
<tr>
<td>V</td>
<td>*</td>
<td>UV</td>
</tr>
<tr>
<td>+</td>
<td>+</td>
<td>UV*</td>
</tr>
<tr>
<td>C</td>
<td>+ (</td>
<td>UV*W</td>
</tr>
<tr>
<td>W</td>
<td>+ (</td>
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<td>-</td>
<td>+ (</td>
<td>UV*W</td>
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<td>+ (</td>
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<td>)</td>
<td>+</td>
<td>UV*WZ–</td>
</tr>
<tr>
<td>/</td>
<td>+ /</td>
<td>UV*WZ–</td>
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<tr>
<td>X</td>
<td>+ /</td>
<td>UV*WZ–X/</td>
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<tr>
<td></td>
<td></td>
<td>UV*WZ–X/+</td>
</tr>
</tbody>
</table>

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.  

```c++
void HashDisplay( )
{
    ifstream fin("MA TTER.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 TotalTeachers()
{
    ifstream 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 TRANSACT as T ON A.ANO = T.ANO
    WHERE T.AMOUNT <= 3000;
(v) 
<table>
<thead>
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<th>ANO</th>
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</tr>
<tr>
<td>105</td>
<td>Simran Kaur</td>
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(vi) 
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(vii) 
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<th>ANO</th>
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<th>MIN(AMOUNT)</th>
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</tbody>
</table>

(viii) 
<table>
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<tr>
<th>Count</th>
<th>Sum(AMOUNT)</th>
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<tbody>
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<td>2</td>
<td>5000</td>
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</tbody>
</table>

**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:

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
<th>XY</th>
<th>X+X.Y</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
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<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**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: 
\[(\overline{X} + \overline{Y} + Z)(X + \overline{Y} + \overline{Z})(\overline{X} + Y + \overline{Z})(\overline{X} + \overline{Y} + Z)\]

**Topic:** Boolean Algebra; **Sub-Topic:** Canonical expression XII-CBSE Board Exam Computer Science

(d) 
Ans. 
\[G(U, V, W, Z) = \sum (3, 5, 6, 7, 11, 12, 13, 15)\]
\[= WZ + VZ + \overline{U}VW + UV\overline{W}\]

**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.

**Disadvantages 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)  

![Diagram](image)  

(iii) **Switch**: Switch would be needed in each of these buildings 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