CHAPTER-1
C++ Revision Tour

1. Tokens, Fundamental Data types, Variables, Operators, Expressions and Type Conversion, Header files, Type of errors.

Q.1. What is an identifier? List the rules of naming an identifier of C++.

Q.2. Name the header file, to which following built-in functions belong to:

(i) strcpy( )	(ii) gets( )	(iii) abs( )	(iv) isalnum
(v) sqrt( )	(vi) write( )	(vii) strcmp( )	(viii) exit( )

Q.3. Name the header file(s) that shall be needed for successful compilation of the following C++ code:

```
void main ( )
{   char Text [40];
    strcpy (Text, "AISSCE");
    puts (Text);
}
```

Q.4. Differentiate between
   i. Logical and Syntax Error
   ii. Run Time and Syntax Error
   Also give suitable example of each.

Q.5. Why main function is special? Give two reasons.

Q.6. Write two advantages of using include compiler directive.

Q.7. What is the difference between type casting and automatic type conversion? Explain with suitable example.

Q.8. Given the following code fragment:

```
          int ch = 20;
    cout << ch << ++ ch << ch << "\n";
```

   i. The output of the code fragment.
   ii. What is the effect of replacing ++ ch with ch + 1?

Q.9. What will be the output of following:

```
void main( )
{       int val = 10;
        cout<< val++ <<val<< ++val;
}
```

2. Flow of Control: if…else, switch, for loop, while loop and do…while loop.

Q.1. What is wrong with the following while loop:

```
(a) int counter = 1;                    (b) int counter = 1;
    while ( counter < 100 )                 while ( counter < 100)
    {       cout<<counter << "\n;                     cout<<counter<<"\n;
            counter - -;                             counter + +;
    }
```

Q.2. Find the output of the following program:

```
#include <iostream.h>
void main( )
{ int A = 5, B = 10;
        for (int I = 1 ; I <= 2 ; I++)
        {       cout<< "Line1" << A++ << "&" << B – 2 << endl;
```

```
                cout<< "Line2" << ++B<< "&" << A + 3 << endl;
        }
    }
```

Q.3. Find the output of the following program:
```
#include <iostream.h>
void main( )
{
        long Number = 7583241;
        int First = 0, Second = 0;
        do
        {
                int R = Number%10;
                if (R %2 = = 0)
                        First += R;
                else
                        Second += R;
                Number /= 10;
        }while(Number > 0);
        cout<<First – Second;
}
```

3. One Dimensional Array and character array: Declaration, Initialization and Access to the array members.

Q.1.   Rewrite the following program after removing the syntactical error(s), if any. Underline
        each correction.
```
#include <iostream.h>
const int Size 5;
void main( )
{
        int Array [Size] ;
        Array = { 50, 40, 30, 20, 10 } ;
        for (Ctr = 0 ; Ctr < Size; Ctr++)
                cout>>Array [Ctr];
}
```

Q.2.   Rewrite the following program after removing all the syntax error(s), if any. Underline
        each correction.
    i.
```
#include (iostream.h)
void main( )
{
    int X[ ] = { 60,50,30,40}, Y; Count = 4;
    cin >> Y ;
    for ( I = Count – 1 ; I >= 0, I - -)
            switch( I )
            {
                    case 0 :
                    case 2 : cout<<Y * X [I ] << endl; break;
                    case 1 :
                    case 3 : cout >> Y + X [I] ;
            }
    }
```
    ii.
```
#include <iostream.h>
Void main ( )
{   int P[ ] = {90, 10, 24, 15} : Q, Number = 4 ;
    Q = 9;
```

```
                        For [ int I = Number – 1 ; I >= 0, I--]
                               Switch ( I )
                               {
                                       Case 0 :
                                       Case 3 : cout >> P [ I ] * Q << endl ; break ;
                                       Case 1 :
                                       Case 2 : cout << P [ I ] + Q ;
                               }
                        }
```

Q.3.   In the following program, find the correct possible output(s) from the options:

```
#include <stdlib.h>
#include <iostream.h>
void main ( )
{
        randomize( );
        char Area[][10]= {"NORTH", "SOUTH", "EAST", "WEST"};
        int ToGo;
        for(int I = 0; I <3, I++)
        {
                ToGo = random (2) +1;
                Cout<<Areaa[ToGo]<<":";
        }
}
```

4. User Defined Function: Prototype Declaration, Function Definition, Passing and returning values, calling function: call by value and call by reference.

Q.1.   Find the output of the following program:

```
#include <iostream.h>
void Changethecontent(int Arr[], int Count)
{
        for (int C = 1;C < Count; C++)
                Arr[C-1] += Arr[C];
}
void main()
{
        int A[] = {3,4,5}, B[]={10,20,30,40}, C[]={900,1200};
        Changethecontent(A, 3);
        Changethecontent(B, 4);
        Changethecontent(C, 2);
        for (int L = 0;L < 3;L++) cout<<A[L]<< '#';
        cout<<endl;
        for (L = 0;L < 4;L++) cout << B[L] << '#';
        cout << endl;
        for (L = 0;L < 2;L++) cout<<C[L] << '#';
}
```

Q.2.   Find the output of the following program : 3

```
#include<iostream.h>
void Indirect(int Temp=20)
{
        for (int 1=10; I<=Temp; I+=5)
        cout<<I<<", ";
        cout<<endl;
```

```
}
void Direct (int &Num)
{
        Num+=10;
        Indirect(Num);
}
void main()
{
        int Number=20;
        Direct(Number);
        Indirect();
        cout<< " Number=" <<Number<<endl ;
}
```

Q.3.   Write a C++ function SUMFUN( ) having two parameters X (of type double) and n (of type integer) with a result type as double to find the sum of the series given below:

$$X + \frac{X^2}{3!} + \frac{X^3}{5!} \ldots + \frac{X^n}{(2n-1)!}$$

Q.4.   Write a function called zero_Small( ) that has two integer arguments being passed by reference and sets the smaller of the two numbers to 0. Write the main program to access this function.

Q.5.   What is the difference between call by value and call by reference? Give an example in C++ to illustrate both.

5. Library Functions: Character and random functions

Q.1.   In the following C++ program what is the expected value of Myscore from Options (i) to (iv) given below. Justify your answer.

```
#include<stdlib.h>
#include<iostream.h>
void main( )
{
    randomize();
    int Score[] = {25,20,34,56, 72, 63}, Myscore;
    Myscore = Score[2 + random(2)];
    cout<<Myscore<<endl;
}
```
(i) 25
(ii) 34
(iii) 20
(iv) None of the above

Q.2.   In the following program, if the value of N given by the user is 15, what maximum and minimum values the program could possibly display?
```
#include <iostream.h>
#include <stdlib.h>
void main()
{
    int N,Guessme;
    randomize();
    cin>>N;
    Guessme=random(N)+10;
    cout<<Guessme<<endl;
}
```

Q.3.   Find the output of the following program:
```
#include <iostream.h>
#include <ctype.h>
void main()
{
        char Text[ ]= "Mind@Work!";
        for (int I=0; Text[I] != '\0'; I++)
        {
                if ( ! isalpha(Text[I]))
                        Text[I]='*';
                else if (isupper (Text[I]))
                        Text[I]=Text[I]+1;
                else
                        Text[i]=Text[I=1];
        }
        cout<<Text;
}
```

6. Structure: Definition, variable declaration, access to the members using structure variable, passing structure type variable to function

Q.1.   Find the output of the following program:

```
#include <iostream.h>
struct PLAY
{ int Score, Bonus;};
void Calculate(PLAY &P, int N=10)
{
        P.Score++;
        P.Bonus += N;
}
void main()
{
        PLAY PL={10,15};
        Calculate(PL, 5);
        cout<<PL.Score<<":"<<PL.Bonus<<endl;
        Calculate(PL);
        cout<<PL.Score<<":"<<PL.Bonus<<endl;
        Calculate(PL,15);
        cout<<PL.Score<<":"<<PL.Bonus<<endl;
}
```

Q.2.   Give the output of the following program:
```
#include <iostream.h>
struct Pixel
{ int C, R;
};
void Display (Pixel P)
{ cout << "Col" << P.C << "Row" << P.R << endl;
}
```

```
void main ( )
{  Pixel X={40, 50}, Y, Z;
    Z = X;
    X . C += 10 ;
    Y = Z ;
    Y . C += 10 ;
    Y . R += 20 ;
    Z . C -= 15 ;
    Display ( X ) ;
    Display ( Y ) ;
    Display ( Z ) ;
}
```

CHAPTER-2
Object Oriented Programming

1. Comparison between Object Oriented Programming and Procedural Programming.

Q.1.   Write two major differences between Object Oriented Programming and Procedural Programming.

Q.2.   What is procedural programming paradigm and what are its limitations?

Q.3.   Write any two advantages and two disadvantages of Object Oriented Programming.

2. Object Oriented Programming Concepts and their implementation: Object, Class, Data Abstraction, Inheritance, Data Encapsulation, Polymorphism, Modularity.

Q.1.   What do you understand by Polymorphism? Give an example in C++ to show its implementation in C++.

Q.2.   What do you understand by Data Encapsulation and Data Hiding?

Q.3.   What is Inheritance? Give an example in C++ to show its implementation in C++.

Q.4.   Illustrate the concept of Inheritance with the help of an example.

Q.5.   Encapsulation is one of the major properties of OOP. How is it implemented in C++?

Q.6.   Reusability of classes is one of the major properties of OOP. How is it implemented in C++?

Q.7.   Define the term Data Hiding in the context of Object Oriented Programming. Give a suitable example using a C++ code to illustrate the same.

CHAPTER-3
Function Overloading

1. Define Function Overloading, Declaration and Definition, How compiler resolve the call to the overloaded function or Steps Involved in Finding the Best Match, Calling Overloaded function.

Q.1.   What is function overloading?

Q.2.   Illustrate the concept of function overloading with the help of an example.

Q.3.   What do you understand by function overloading? Give an example illustrating its use in a C++ program.