
Q1) What is the output of the following code fragments?

1)
```
double x;

   x = 3.0 / 4.0 + 3  + 2 / 4

   cout<<x;
```

A) 5.7500000 B) 4.2500000 C) 1.7500000 D) 3.7500000

2)
```
int FD, Year=2019;
   FD=Year%4 == 0 ?29 :28;

   cout<<FD;
```

A) 29 B) 28 C) 1 D) 0

3)
```
int x=0;
   while( x < 5)

      cout << x << endl;

      x ++;

      cout << x << endl;
```

A) 0 B) 5 C) 4 D)unable to determine

4)
```
int grade=80;
   if(grade >= 60)
   cout<< "You passed. ";
   else;
   cout<< "You failed.";
```

A) You passed. B) You failed.
C) You passed. You failed. D) Wrong code segment.

Q2) Complete the following C++ code that calculates the harmonic mean of two positive integers entered from the keyboard. The harmonic mean of two positive numbers x and y is given by

$$H = \frac{2}{\frac{1}{x} + \frac{1}{y}}.$$

A sample run of the program is given below:

Please enter two positive integers: 3 6
The harmonic mean of 3 and 6 is 4

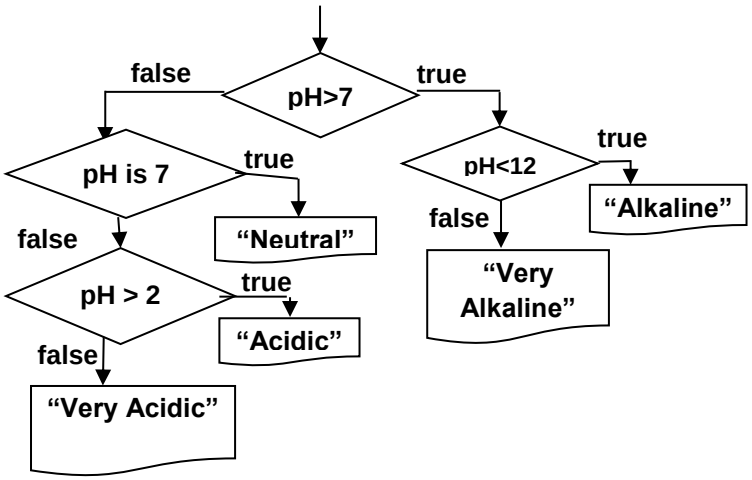
```
#include <iostream>
using namespace std;
int main() {
// Declare variables
…..
.....
// Print a message and read two integers
…..
…..
// Perform the computation
…..
// Output the result
…….

return 0;}
```

Q3) Write a C++ program that asks the user to enter a letter grade, then it will display one of the following messages.

Letter typed by the user	Message displayed
'A' or 'a'	Excellent
'B' or 'b'	Very Good
'C' or 'c'	Average
'D' or 'd'	Poor
Any other character	Wrong input

```
#include<iostream>

using namespace std;

int main(){

char grade;

cout<<"Enter a letter grade >";

cin>>grade;

//Perform the required task









return 0;}
```

Q4) **C**onsider the following flowchart. Assume that it will be implemented using simple if statements (if without else or else if). Put the correct condition for each of if statements so that the corresponding message is printed.



Note:

Same as

Condition of if statement	**Printed message**
if( )	Very Acidic
if( )	Acidic
if( )	Neutral
if( )	Very Alkaline
if( )	Alkaline

Q5) Trace the following C++ code and provide its output.

```
#include <iostream>
using namespace std;
int main()
{    int n=294, sum=0;
     while(n>0)
     {sum=sum+n%10;
     n=n/10;
     }
     cout<<"sum="<<sum<<endl;
return 0;}
```

n	sum	n>0

Output:

…….

Explain verbally in English what does this code actually do?

…….

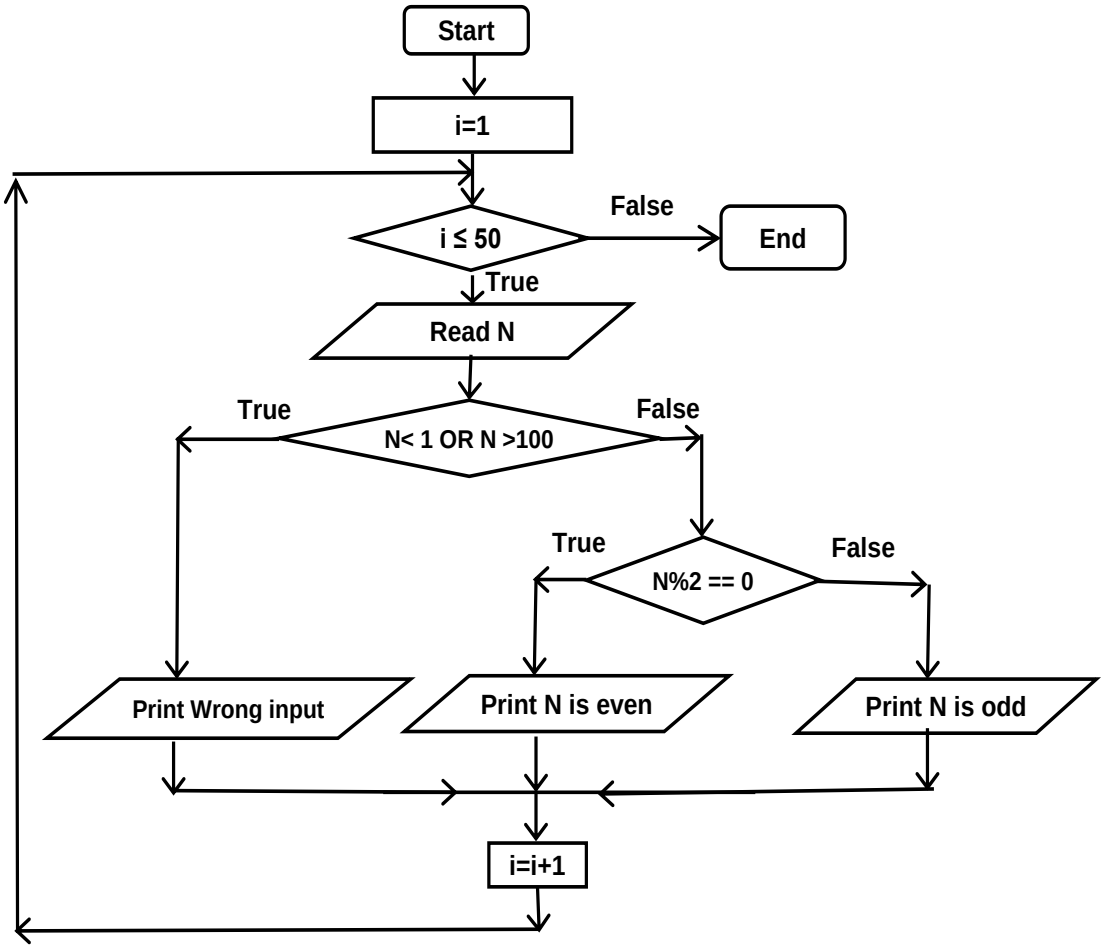
Q6) Complete the following code that finds the product of odd numbers from 1 to 99; i.e.

Product=1x3x5x7x…..x99

Let all variables be of type integer.

```
#include <iostream>
using namespace std;
int main() {  …….
     …….
     …….
     …….
     cout<<"Product="<<product;
return 0;}
```

Q7) Consider the Flowchart below. Complete the given C++ implementation.




```
#include <iostream>
using namespace std;
int main() {  …….
      ……. ……. 
      ……. ……. 
      ……. ……. 
      ……. ……. 
      ……. ……. 
return 0;}
```