1. How many times will the following code print "Welcome to Java"?

```
int count = 0;
while (count < 10) {
  System.out.println("Welcome to Java");
  count++;
}
```

a. 8

b. 9

c. 10

d. 11

e. 0

2. Analyze the following code.

```
int count = 0;
while (count < 100) {
  // Point A
  System.out.println("Welcome to Java!");
  count++;
  // Point B
}
// Point C
```

a. count < 100 is always true at Point A

b. count < 100 is always true at Point B

c. count < 100 is always false at Point B

d. count < 100 is always true at Point C

e. count < 100 is always false at Point C

3. How many times will the following code print "Welcome to Java"?

```
int count = 0;
while (count++ < 10) {
  System.out.println("Welcome to Java");
}
```

a. 8

b. 9

c. 10

d. 11

e. 0

4. What is the output of the following code?

```
int x = 0;
while (x < 4) {
  x = x + 1;
}
System.out.println("x is " + x);
```

a. x is 0

b. x is 1

c. x is 2

d. x is 3

e. x is 4

5. What will be displayed when the following code is executed?

```
int number = 6;
while (number > 0) {
  number -= 3;
  System.out.print(number + " ");
}
```

a. 6 3 0

b. 6 3

c. 3 0

d. 3 0 -3

e. 0 -3

6. How many times will the following code print "Welcome to Java"?

```
int count = 0;
do {
  System.out.println("Welcome to Java");
  count++;
} while (count < 10);
```

a. 8

b. 9

c. 10

d. 11

e. 0

7. How many times will the following code print "Welcome to Java"?

```
int count = 0;
do {
  System.out.println("Welcome to Java");
} while (count++ < 10);
```

a. 8

b. 9

c. 10

d. 11

e. 0

8. How many times will the following code print "Welcome to Java"?

```
int count = 0;
do {
  System.out.println("Welcome to Java");
} while (++count < 10);
```

a. 8

b. 9

c. 10

d. 11

e. 0

9. What is the value in count after the following loop is executed?

```
int count = 0;
do {
  System.out.println("Welcome to Java");
} while (count++ < 9);
System.out.println(count);
```

a. 8

b. 9

c. 10

d. 11

e. 0

10. Analyze the following statement:

```
double sum = 0;
for (double d = 0; d < 10;) {
  d += 0.1;
  sum += sum + d;
}
```

a. The program has a compile error because the adjustment is missing in the for loop.

b. The program has a compile error because the control variable in the for loop cannot be of the double type.

c. The program runs in an infinite loop because d < 10 would always be true.

d. The program compiles and runs fine.

11. Which of the following loops prints "Welcome to Java" 10 times?

A:

```
for (int count = 1; count <= 10; count++) {
  System.out.println("Welcome to Java");
}
```

B:

```
for (int count = 0; count < 10; count++) {
  System.out.println("Welcome to Java");
}
```

C:

```
for (int count = 1; count < 10; count++) {
  System.out.println("Welcome to Java");
}
```

D:

```
for (int count = 0; count <= 10; count++) {
  System.out.println("Welcome to Java");
}
```

a. BD

b. ABC

c. AC

d. BC

e. AB

12. Which of the following loops correctly computes 1/2 + 2/3 + 3/4 + ... + 99/100?

A:

```
double sum = 0;
for (int i = 1; i <= 99; i++) {
  sum = i / (i + 1);
}
System.out.println("Sum is " + sum);
```

B:

```
double sum = 0;
for (int i = 1; i < 99; i++) {
  sum += i / (i + 1);
}
System.out.println("Sum is " + sum);
```

C:

```
double sum = 0;
for (int i = 1; i <= 99; i++) {
  sum += 1.0 * i / (i + 1);
}
System.out.println("Sum is " + sum);
```

D:

```
double sum = 0;
for (int i = 1; i <= 99; i++) {
  sum += i / (i + 1.0);
}
System.out.println("Sum is " + sum);
```

E:

```
double sum = 0;
for (int i = 1; i < 99; i++) {
  sum += i / (i + 1.0);
}
System.out.println("Sum is " + sum);
```

a. BCD

b. ABCD

c. B

d. CDE

e. CD

13. The following loop displays _____.

```
for (int i = 1; i <= 10; i++) {
  System.out.print(i + " ");
  i++;
}
```

a. 1 2 3 4 5 6 7 8 9

b. 1 2 3 4 5 6 7 8 9 10

c. 1 2 3 4 5

d. 1 3 5 7 9

e. 2 4 6 8 10

14. Do the following two statements in (I) and (II) result in the same value in sum?

(I):

```
for (int i = 0; i &lt; 10; ++i) {
  sum += i;
}
```

(II):

```
for (int i = 0; i &lt; 10; i++) {
  sum += i;
}
```

a. Yes

b. No

15. What is the output for y?

```
int y = 0;
for (int i = 0; i &lt; 10; ++i) {
  y += i;
}
System.out.println(y);
```

a. 10

b. 11

c. 12

d. 13

e. 45

16. What is i after the following for loop?

```
int y = 0;
for (int i = 0; i &lt; 10; ++i) {
  y += i;
}
```

a. 9

b. 10

c. 11

d. undefined

17. Is the following loop correct?

```
for ( ;  ; );
```

a. Yes

b. No

18. Analyze the following fragment:

```
double sum = 0;
double d = 0;
while (d != 10.0) {
  d += 0.1;
  sum += sum + d;
}
```

a. The program does not compile because sum and d are declared double, but assigned with integer value 0.

b. The program never stops because d is always 0.1 inside the loop.

c. The program may not stop because of the phenomenon referred to as numerical inaccuracy for operating with floating-point numbers.

d. After the loop, sum is 0 + 0.1 + 0.2 + 0.3 + ... + 1.9

19. Analyze the following code:

```
public class Test {
  public static void main (String[] args) {
    int i = 0;
    for (i = 0; i < 10; i++);
      System.out.println(i + 4);
  }
}
```

a. The program has a compile error because of the semicolon (;) on the for loop line.

b. The program compiles despite the semicolon (;) on the for loop line, and displays 4.

c. The program compiles despite the semicolon (;) on the for loop line, and displays 14.

d. The for loop in this program is same as for (i = 0; i < 10; i++) { }; System.out.println(i + 4);

20. How many times is the println statement executed?

```
for (int i = 0; i < 10; i++)
  for (int j = 0; j < i; j++)
    System.out.println(i * j)
```

a. 100

b. 20

c. 10

d. 45

21. Which pattern is produced by the following code?

```
for (int i = 1; i <= 6; i++) {
  for (int j = 6; j >= 1; j--)
    System.out.print(j <= i ? j + " " : " " + " ");
  System.out.println();
}
```

Pattern A	Pattern B	Pattern C	Pattern D
1	1 2 3 4 5 6	1	1 2 3 4 5 6
1 2	1 2 3 4 5	2 1	1 2 3 4 5
1 2 3	1 2 3 4	3 2 1	1 2 3 4
1 2 3 4	1 2 3	4 3 2 1	1 2 3
1 2 3 4 5	1 2	5 4 3 2 1	1 2

1 2 3 4 5 6 1 6 5 4 3 2 1 1

a. Pattern A

b. Pattern B

c. Pattern C

d. Pattern D

22. How many times is the println statement executed?

```
for (int i = 0; i < 10; i++)
  for (int j = 0; j < 10; j++)
    System.out.println(i * j);
```

a. 100

b. 20

c. 10

d. 45

23. To add 0.01 + 0.02 + ... + 1.00, what order should you use to add the numbers to get better accuracy?

a. add 0.01, 0.02, ..., 1.00 in this order to a sum variable whose initial value is 0.

b. add 1.00, 0.99, 0.98, ..., 0.02, 0.01 in this order to a sum variable whose initial value is 0.

24. Analyze the following code.

```
double sum = 0;
for (double d = 0; d < 10; sum += sum + d)  {
  d += 0.1;
}
```

A. The program has a syntax error because the adjustment statement is incorrect in the for loop.

B. The program has a syntax error because the control variable in the for loop cannot be of the double type.

C. The program compiles but does not stop because d would always be less than 10.

D. The program compiles and runs fine.

25. What is y after the following for loop statement is executed?

```
int y = 0;
for (int i = 0; i < 10; ++i)  {
  y += 1;
}
```

A. 9

B. 10

C. 11

D. 12

26. Will the following program terminate?

```
int balance = 10;
while (true) {
  if (balance &lt; 9)
    break;
  balance = balance - 9;
}
```

a. Yes

b. No

27. What is sum after the following loop terminates?

```
int sum = 0;
int item = 0;
do {
  item++;
  sum += item;
```

```
  if (sum &gt; 4)
    break;
}
while (item &lt; 5);
```

a. 5

b. 6

c. 7

d. 8

e. 9

28. What is the output after the following loop terminates?

```
int number = 25;
int i;
boolean isPrime = true;
for (i = 2; i < number && isPrime; i++) {
  if (number % i == 0) {
    isPrime = false;
  }
}
System.out.println("i is " + i + " isPrime is " + isPrime);
```

a. i is 5 isPrime is true

b. i is 5 isPrime is false

c. i is 6 isPrime is true

d. i is 6 isPrime is false

29. What is the output after the following loop terminates?

```
int number = 25;
int i;
```

```
boolean isPrime = true;
for (i = 2; i < number; i++) {
  if (number % i == 0) {
    isPrime = false;
    break;
  }
}
System.out.println("i is " + i + " isPrime is " + isPrime);
```

a. i is 5 isPrime is true

b. i is 5 isPrime is false

c. i is 6 isPrime is true

d. i is 6 isPrime is false

30. What is sum after the following loop terminates?

```
int sum = 0;
int item = 0;
do {
  item++;
  if (sum &gt;= 4)
    continue;
  sum += item;
}
while (item &lt; 5);
```

a. 6

b. 7

c. 8

d. 9

e. 10

31. Will the following program terminate?

```
int balance = 10;
while (true) {
  if (balance &amp;lt; 9)
    continue;
  balance = balance - 9;
}
```

a. Yes

b. No

32. What balance after the following code is executed?

```
int balance = 10;
while (balance >= 1) {
  if (balance < 9)
    continue;
  balance = balance - 9;
}
```

A. -1

B. 0

C. 1

D. 2

E. The loop does not end

33. What is the value of balance after the following code is executed?

```
int balance = 10;
while (balance >= 1) {
  if (balance < 9)
    break;
  balance = balance - 9;
```

```
}
```

A. -1

B. 0

C. 1

D. 2

34. What is the number of iterations in the following loop?

```
 for (int i = 1; i < n; i++) {
   // iteration
 }
```

a. 2*n

b. n

c. n - 1

d. n + 1

35. What is the number of iterations in the following loop?

```
 for (int i = 1; i <= n; i++) {
   // iteration
 }
```

a. 2*n

b. n

c. n - 1

d. n + 1

36. Suppose the input for number is 9. What is the output from running the following program?

```
import java.util.Scanner;
public class Test {
 public static void main(String[] args) {
   Scanner input = new Scanner(System.in);
```

```
    System.out.print("Enter an integer: ");
    int number = input.nextInt();
    int i;
    boolean isPrime = true;
    for (i = 2; i < number && isPrime; i++) {
      if (number % i == 0) {
        isPrime = false;
      }
    }
    System.out.println("i is " + i);
    if (isPrime)
      System.out.println(number + " is prime");
    else
      System.out.println(number + " is not prime");
  }
}
```

a. i is 3 followed by 9 is prime

b. i is 3 followed by 9 is not prime

c. i is 4 followed by 9 is prime

d. i is 4 followed by 9 is not prime

37. Analyze the following code:

```
import java.util.Scanner;
public class Test {
  public static void main(String[] args) {
    int sum = 0;
    for (int i = 0; i < 100000; i++) {
      Scanner input = new Scanner(System.in);
```

```
    sum += input.nextInt();
   }
  }
}
```

a. The program does not compile because the Scanner input = new Scanner(System.in); statement is inside the loop.

b. The program compiles, but does not run because the Scanner input = new Scanner(System.in); statement is inside the loop.

c. The program compiles and runs, but it is not efficient and unnecessary to execute the Scanner input = new Scanner(System.in); statement inside the loop. You should move the statement before the loop.

d. The program compiles, but does not run because there is not prompting message for entering the input.