

1. Consider the following two static methods, where f2 is intended to be the iterative version of f1.

```
public static int f1(int n)
{
    if (n < 0)
        return 0;
    else
        return (f1(n - 1) + n * 10);
}

public static int f2(int n)
{
    int answer = 0;

    while (n > 0)
    {
        answer = answer + n * 10;
        n--;
    }

    return answer;
}
```

The method f2 will always produce the same results as f1 under which of the following conditions?

- I. n < 0
- II. n = 0
- III. n > 0

- A. I only
- B. II only
- C. III only
- D. II and III only
- E. I, II, and III

2. Assume that methods f and g are defined as follows.

```
public int f(int x)
{
    if (x <= 0)
        return 0;
    else
        return g(x - 1);
}

public int g(int x)
{
    if (x <= 0)
        return 0;
    else
        return (f(x - 1) + x);
}
```

What value is returned as a result of the call f(6) ?

A. 0 B. 3 C. 6 D. 9 E. 12

3. Consider the following static method.

```
private static void recur(int n)
{
    if (n != 0)
    {
        recur(n - 2);
        System.out.print(n + " ");
    }
}
```

What numbers will be printed as a result of the call `recur(7)` ?

A. -1 1 3 5 7

B. 1 3 5 7

C. 7 5 3 1

D. Many numbers will be printed because of infinite recursion.

E. No numbers will be printed because of infinite recursion.

4. Consider the following method.

```
// precondition: x >= 0
public void mystery(int x)
{
    if ((x / 10) != 0)
        mystery(x / 10);

    System.out.print(x % 10);
}
```

Which of the following is printed as a result of the call `mystery(123456)` ?

A. 16

D. 654321

B. 56

E. Many digits are printed due to infinite recursion.

C. 123456

5. Consider the following recursive method.

```
public static String recur(int val)
{
    String dig = "" + (val % 3);

    if (val / 3 > 0)
        return dig + recur(val / 3);

    return dig;
}
```

What is printed as a result of executing the following statement?

```
System.out.println(recur(32));
```

A. 20

B. 102

C. 210

D. 1020

E. 2101