Some Sample AP Computer Science A Questions

Note: These aren't from actual AP tests. I've created these questions based on looking at actual AP tests. Also, in cases where it's not necessary to have choices, I've removed the choices and changed the format of the question to short answer.

Short Answer Questions

1) What does the following segment of Java code print out?

```
double x = 4.5;
int y = (int)x;
System.out.println(x+" "+y);
```

2) What does the following segment of Java code print out?

```
int x = 7, y = 3;
int z = x/y + x%y;
if (z == x)
    y++;
if (z == y)
    x++;
System.out.println(x+" "+y+" "+z);
```

3) What does the following segment of Java code print out?

```
for (int i=1; i<30; i = i + 3)
{
    if (i%2 == 0)
        System.out.print((i/2)+" ");
}
System.out.println();
```

4) What does the following segment of Java code do in general?

```
Scanner stdin = new Scanner(System.in);
System.out.println("Enter n.");
int n = stdin.nextInt();
int total = 0;
while (n > 0) {
    total = total + n%10;
    n = n/10;
}
System.out.println(total);
```

Multiple Choice Questions

1) Which of the following Boolean expressions are equivalent? (Assume that x and y are integer variables that have been initialized with the intended values.)

```
i) ((x > 0) && (y > 0)) || ((x > 0) && (y < 0))

ii) x != y

iii) (x > 0) && (y != 0)

iv) (x > 0) && (x + y != x)
```

A) i and ii
B) i and iii
C) i, iii, iv
D) ii, iii, iv
E) All 4 are different, logically.

2) The Boolean expression `!(A || B)` is equivalent to which of the following?

A) `!A || !B`
B) `!A ||  B`
C) `!A && !B`
D) `!A &&  B`
E) `None of the Above`

3) What does the following code segment print out?

```
for (int i=5; i>0; i--)
{
    for (int j=0; j<i; j++)
        System.out.print((2*i-j)+" ");
    System.out.println();
}
```

```
A) 5 4 3 2 1  B) 10 9 8 7 6  C) 10 8 6 4 2  D) 0 2 4 6 8
   4 3 2 1       8 7 6 5        8 6 4 2        0 2 4 6
   3 2 1         6 5 4          6 4 2          0 2 4
   2 1           4 3            4 2            0 2
   1             2              2              0

E) None of the Above
```

Free Response Questions

1) Write two ***different*** segments of code that, assuming that the integer variable n has been assigned to a positive value, print out the following:

```
1 2 3 4 … n
1 2 ..n-1
…
1 2
1
```

2) Complete the program below so that it prints out the digits of the integer n, in reverse order. For example, if the user enters 73546, then your program should print out 64537. (Hint: one of the short answer questions may shed light on how to solve this problem!)

```
import java.util.*;
public class revdigits {

    public static void main(String[] args) {

        Scanner stdin = new Scanner(System.in);
        System.out.println("Enter n.");
        int n = stdin.nextInt();

        // Fill in your code here!

    }
}
```

3) The formula for how far an object falls from a height of h, in t sections is $16t^2$ feet. Thus, the object's height off the ground after t seconds is equal to $\max(0, h - 16t^2)$. Complete the program below so that it prints out a chart of how high off the ground an object is at each second (starting at t = 0) until the object hits the ground.

```
import java.util.*;
public class drop {

    public static void main(String[] args) {

        Scanner stdin = new Scanner(System.in);
        System.out.println("Enter the initial height.");
        int height = stdin.nextInt();

        // Fill in your code here!
    }
}
```