Unit 5 Exam 1 – Alternative Version – Solutions

1. Set the following for loop header so that it prints the numbers, 2 4 6 8 10.

```
for (int i = ___; i ____; i _____)
      System.out.print(i + " ");
```

   a. 2, < 10, += 2
   b. 0, < 10, += 2
   c. 2, <= 10, ++
   d. 2, <= 10, += 2
   e. 0, <= 10, += 2

2. Consider the code segment:

```
if (x < 200 || x > 299)
      System.out.println( "Not in the 200's");
else
      System.out.println( "In the 200's");
```

   Which of the following code segments produces the exact same output?

I.
```
if (x < 200)
      System.out.println( "Not in the 200's");
else if ( x > 299)
      System.out.println( "Not in the 200's");
else
      System.out.println( "In the 200's");
```

II.
```
if (x < 200) {
      if ( x > 300)
            System.out.println( "In the 200's");
      else
            System.out.println( "Not in the 200's");
} else
      System.out.println( "In the 200's");
```

III.
```
if (x >= 200)
      System.out.println( "In the 200's");
else if (x <= 299)
      System.out.println( "In the 200's");
else
      System.out.println( "Not in the 200's");
```

   a. I only
   b. II only
   c. III only
   d. I and III
   e. II and III

3. Given the following variables, which boolean expression is true?

```
int a = 15;
int b = 10;
```

a. a < b && a == b
b. a > b || a == b
c. a < b && a != b
d. b >= a && a > b
e. None of the above

4. What is output by the following code?

```
int x = 7 % 9;
if (x > 10)
      System.out.println( 1);
else if (x > 8)
      System.out.println( 2);
else if (x > 6)
      System.out.println( 3);
else if ( x > 4)
      System.out.println( 4);
else
      System.out.println( 5);
```

a. 1 b. 2 **c. 3** d. 4 e. 5

5. What is output by the following code?

```
int x = 14 % 5;
if (x > 10)
      System.out.println( 1);
else if (x > 8)
      System.out.println( 2);
else if (x > 6)
      System.out.println( 3);
else if ( x > 4)
      System.out.println( 4);
else
      System.out.println( 5);
```

a. 1 b. 2 c. 3 d. 4 **e. 5**

6. Classes use _____ to store their data.
a. constructors
b. methods
c. variables
d. parameters
e. references

7. Consider the following class:

```
public class A {

	public A() {
		System.out.print("one");
	}

	public A(int x)  {
		this();
		System.out.print("two");
	}
}
```

What is output by the following code?

```
A a = new A(7);
```

a. one
b. two
c. onetwo
d. twoone
e. nothing

8. Consider the following class declaration.

```
public class Die {
	private int numSides;
	private int value;

	public Die() {
		numSides = 6;
		/* Missing Code */
	}
}
```

Which of the following could correctly replace /* Missing Code */ in the default constructor so that value is set to a possible die roll? (assume that the lowest possible value is 1)

a. value = (int) (Math.random() * numSides);
b. value = Math.random() * numSides;
c. numSides = (int) (Math.random() * value);
d. value = Math.random() * numSides + 1;
e. value = (int) (Math.random() * numSides) + 1;

9. The keyword to call the constructor and build an object in memory is _____.

a. new
b. int
c. void
d. return
e. private

Questions 10 – 12 refer to the following class definitions:

```
public class Battery {
      private boolean fullyCharged;
      private int charge;
      private String type;

      public Battery (int ch, String ty) {
            charge = ch;
            if (charge == 100)
                  fullyCharged = true;
            type = ty;
      }

      public boolean isFullyCharged() {
            //returns true if the Battery is fully charged, false
otherwise
            //implementation not shown.
      }

      //Other methods not shown
}//Battery

public class Inventory {
      ArrayList<Battery> inventory;

      public Inventory (ArrayList<Battery> inv)  {
            inventory = inv;
      }

      //other methods not shown

}//Inventory
```

10. To add a method that can count how many Battery objects in the ArrayList inventory are type AA, which of the following is true?
    a. **The method should be implemented in Inventory.**
    b. The method should be implemented in Battery and Inventory.
    c. The method could be implemented in Battery or Inventory.
    d. The method cannot be written because the ArrayList is declared private.
    e. The method should be implemented in Battery.

11. Which accessor method could be implemented in Inventory?
    a. **getInventory() //returns the ArrayList of all of the Batteries in the Inventory**
    b. getCharge() // returns the charge of a Battery
    c. equals() //returns true if the type and charge of two Batteries are the same
    d. getType() // returns the type of a Battery
    e. isFullyCharged() //returns true if a Battery is fully charged

12. The following method in Inventory is intended to count how many batteries are **not** fully charged.

```
public int countFullyCharged () {
      int c = 0;

      /* Missing Code */

      return c;
}
```

What should replace /* Missing Code */ so that the method works as intended?

a.
```
for ( Battery b : inventory)  {
      c++;
}
```

b.
```
for ( Battery b : inventory) {
      if (b.charge == 100)
            c++;
}
```

c.
```
for ( Battery b : inventory) {
      if (! b.isFullyCharged())
            c++;
}
```

d.
```
if (! inventory.isFullyCharged())
      c++;
```

e. None of the above

13. Methods used to return variables' values are called _____.
    a. accessors
    b. equals
    c. toString
    d. void
    e. mutators

14. Which of the following correctly declares the default constructor for a class called Phone.
    a. public void Phone()
    b. public int Phone()
    c. public Phone()
    d. private Phone()
    e. private void Phone()

15. The following class is used to store a time with values for hours and minutes:

```
public class Time {
      private int min;
      private int hour;

      public Time(int m, int h) {
            min = m;
            hour = h;
      }
      public int getMin () {
            return min;
      }
      public int getHour () {
            return hour;
      }
}
```

What is printed as a result of executing the following code segment?

```
Time reservation1 = new Time (7, 30);
Time reservation2 = new Time (7, 30);

if (reservation1.getHour() == reservation2.getHour() &&
                  reservation1.getMin() == reservation2.getMin())
      System.out.print("equal");
else
      System.out.print("not equal");
```

a. equal
b. not equal
c. equalnot equal
d. 7:30
e. Nothing, there is an error

16. What is printed as a result of executing the following code segment?

```
ArrayList <String> list = new ArrayList <String> ();
list.add ("cookies");
list.add ("nachos");
list.add ("chips");
list.add ("trail mix");
list.add ("celery");

for (String s: list)
      if (s.length() < 7 && s.length() > 4)
            System.out.print(s.toUpperCase() + " ");
```

a. cookies nachos chips celery
b. cookies nachos chips trail mix celery
c. COOKIES NACHOS CHIPS CELERY
d. nachos chips celery
e. NACHOS CHIPS CELERY

17. Which of the following methods correctly removes duplicate words from an ArrayList? (You may assume the ArrayList is sorted alphabetically.)

I.
```
public static void removeDuplicate(ArrayList <String> li) {
      int i = 0;
      for (String s : li) {
            if(s == li.get(i))
                  li.remove(i);
            i++;
      }
}
```

II.
```
public static void removeDuplicate (ArrayList <String> li) {
      for (int i = 1; i < li.size(); i++) {
            if (li.get(i).equals(li.get(i-1)))
                  li.remove(i-1);
       }
}
```

III.
```
public static void removeDuplicate (ArrayList <String> li) {
      for (int i = li.size()-2; i >= 0; i--) {
            if (li.get(i).equals(li.get(i+1)))
                  li.remove(i+1);
      }
}
```

a. I only
b. II only
c. III only
d. I and II
e. I, II and III

18. Consider the following declaration for an ArrayList:

```
ArrayList <String> list = new ArrayList <String> ();
```

And this code, which processes the Strings stored in the list:

```
for (int i =0; i < list.size(); i++) {
      list.set(i, list.get(i) + list.get(i).charAt(0) );
}
```

Which of the following best describes what this loop does?

a. Adds the last letter in the String onto the beginning.
b. Moves the first String in the ArrayList to the end of the ArrayLIst.
c. Removes the first letter in each String in the ArrayList.
d. Adds the first letter in each String onto the end of that String.
e. Does not change the Strings in the ArrayList.

19. Consider the following code segment:

```
ArrayList <Light> bulbs = new ArrayList <Light> ();
bulbs.add(new Light());
bulbs.remove(0);
bulbs.add(new Light());
Light b = new Light();
bulbs.add(1, b);
bulbs.add(new Light());
bulbs.remove(0);
bulbs.add(new Light());
bulbs.remove(2);
bulbs.add(new Light());
```

After running the code, what is the size of bulbs?

a. 2
b. 3
c. 4
d. 5
e. 6

20. An ArrayList can hold _____.

a. Only primitive types
b. Both class and primitive types
c. Only class types
d. Only Strings
e. Only Wrapper Classes

