SUMMER 2007 CS1316 OPTIONAL QUIZ 4 VERSION B

NAME: ……

PRISM ID: ………..

GRADING TA (Circle one)**:**   **Kristin**   **Rory**

Select the **BEST** answer for the following questions:

_____ 1. Why are modifiers, or getters and setters such as getName() and setName(), necessary for some variables?
   a. Modifiers are the only way to access instance variables with private visibility from outside of the class.
   b. Modifiers are the only way to access instance variables with public visibility from outside of the class.
   c. Modifiers are the only way to access static instance variables from outside of the class.
   d. Modifiers are the only way to access instance variables with public visibility from a super class.

_____ 2. Which of the following is **NOT** true about a constructor of a class?
   a. A constructor must always be declared within a class (no default constructor is provided).
   b. A constructor initializes an instance of a class.
   c. A constructor must have the same name as the class.
   d. A constructor does not have a return type.

_____ 3. A _____ data structure takes up a fixed amount of space in memory.
   a. Dynamic
   b. Static

_____ 4. Having fixed length is a characteristic of a _____ structure.
   a. Dynamic
   b. Static

_____ 5. It is easier to insert and delete in the middle of a _____ data structure than in _____ one
   a. Dynamic, Static
   b. Static, Dynamic

_____ 6. A _____ data structure is harder to index than a _____ structure.
   a. Dynamic, Static
   b. Static, Dynamic

_____ 7. The main difference between a tree and a graph is that:
   a. A tree **may** have cycles, while a graph **cannot** have cycles.
   b. A tree **may** have cycles, while a graph **must** have cycles.
   c. A tree **cannot** have cycles, while a graph **must** have cycles.
   d. A tree **cannot** have cycles, while a graph **may** have cycles.

_____ 8. A graph is a type of tree.
   a. True
   b. False

_____ 9. A _____ variable or method is accessible without declaring a new instance of the class it is contained within.
   a. public
   b. private
   c. static
   d. final

_____ 10. Explain the process of adding another element to an array that is already full:
   a. Create another array of greater size, copy everything from the old shorter array, and then add the new element.
   b. Just add the element. The array is a dynamic structure and can easily accommodate more elements.
   c. None of the above.

_____ 11. Abstract classes use the Java keyword _____, while interfaces use _____.
   a. extends, implements
   b. implements, extends
   c. throws, implements
   d. extends, throws

_____ 12. Abstract classes and interfaces both can contain regular, non-abstract methods.
   a. True.
   b. False.

_____ 13. Abstract classes and interfaces both cannot be instantiated.
   a. True.
   b. False.

_____ 14. Abstract classes and interfaces both require its child class or implementing class to override all of its methods (By require, meaning that Java will throw an error if you do not).
   a. True.
   b. False.

_____ 15. Which of the following describes a post-order traversal?
   a. PLR; Visit Parent then Left child then Right child.
   b. LPT; Visit Left child then Parent then Right child.
   c. LRP; Visit Left child then Right child then Parent.

_____ 16. Which of the following describes an in-order traversal?
   a. PLR; Visit Parent then Left child then Right child.
   b. LPR; Visit Left child then Parent then Right child.
   c. LRP; Visit Left child then Right child then Parent.

_____ 17. Which of the following describes a pre-order traversal?
   a.   PLR; Visit Parent then Left child then Right child.
   b.   LPT; Visit Left child then Parent then Right child.
   c.   LRP; Visit Left child then Right child then Parent.

_____ 18. For a Queue, insertion is at the _____ and removal at the _____.
   a.   First (head), last (tail)
   b.   Last (tail), first (head)
   c.   Last (tail), last (tail)
   d.   First (head), first (head)
   e.   Both a and b, because it does not matter which occurs at what end as long as the operations occur at different ends.
   f.   Both c and d, because it does not matter which occurs at what end as long as the operations occur at the same end.

_____ 19. For a Stack, insertion is at the _____ and removal at the _____.
   a.   First (head), last (tail)
   b.   Last (tail), first (head)
   c.   Last (tail), last (tail)
   d.   First (head), first (head)
   e.   Both a and b, because it does not matter which occurs at what end as long as the operations occur at different ends.
   f.   Both c and d, because it does not matter which occurs at what end as long as the operations occur at the same end.

_____ 20. In continuous simulations, time is advanced from event to event.
   a.   True.
   b.   False.

_____ 21. A doubly-linked list is a LinkedList where each node has a reference to the previous node and the next node.
   a.   True.
   b.   False.

Consider the following code for questions 22 -25:

```
1  public class Person{
2     String name;
3     public Person(String name){
4      this.name = name;
5     }
6
7     public void speak(){
8      System.out.println("My name is "+name+". I am a Person.");
9     }
10 }
```

```
1   public class Student extends Person{
2      String major;
3      public Student(String name, String major){
4         super(name);
5         this.major = major;
6      }
7
8      public void speak(){
9         super.speak();
10        System.out.println("My major is "+major+".");
11     }
12  }
```

_____ 22. What is happening in line 4 of the Student class?
- a. The Student class is calling a constructor in the child class.
- b. The Student class is calling a constructor in the parent class.
- c. The Student class is calling a method (but not a constructor) in the parent class.
- d. The Student class is calling a method (but not a constructor) in the child class.

_____ 23. What is happening in line 9 of the Student class?
- a. The Student class is calling a constructor in the child class.
- b. The Student class is calling a constructor in the parent class.
- c. The Student class is calling a method (but not a constructor) in the parent class.
- d. The Student class is calling a method (but not a constructor) in the child class.

_____ 24. What will print out in the interaction pane, after the following lines of code:

```
Student steve = new Student("Steve", "ISYE");
steve.speak();
```

- a. `My major is ISYE.`
- b. `My name is Steve. I am a Person.`
- c. `My name is Steve. I am a Person.`
  `My major is ISYE.`
- d. Some exception will occur.

_____ 25. What will print out in the interaction pane, after the following lines of code:

```
Person lucy = new Student("Lucy", "CM");
lucy.speak();
```

- a. `My name is Lucy. I am a Person.`
  `My major is CM.`
- b. `My name is Lucy. I am a Person.`
- c. `My major is CM.`
- d. Some exception will occur.