Full Name: ___________________

*Please answer each question only within the space provided for each question.*

*Don’t write answer on a blank page. All questions have equal points.*

1. What are the seven perils of bad design? Explain each one of them.

2. What’s the consequence of blindly implementing a set of design principles or design patterns?

3. When would you be inclined to use an Adapter pattern? Between the two scopes of adapters, which one is more flexible and why?
4. What is the Execute Around Method pattern? Given an example of when you’d use it. What language feature comes in very handy to implement this pattern?

5. In Java, ArrayList implements the List interface. If you want thread-safety, you can call Collections.synchronizedList(list) and get the List interface to an object that provides thread safety around an arraylist. Alternately, you can call Collections.unmodifiableList(list) to get the List to an object that can’t be changed. What design pattern is being used here? Explain.
6. Mention three design patterns that have similar structure, but different intent. Show a sample of their structure (sketch a UML diagram).

7. An Person needs a calculator to perform calculations. An Accountant inherits from Person, needs a simple calculator, so overrides the getCalculator() method of Person and returns a simple calculator from that method. An Engineer, on the other hand, also extends Person but overrides the getCalculator() method to return a scientific calculator. What design pattern is being used here? Explain.
8. In a library, a Node class represents an XML node like element, text, etc. A NodeList class represents a collection of Nodes. The library designer inherited the Node from the NodeList. Assume this is a reasonably good design move. Why would the designer do that? What would be the advantage? Do you see any pattern being used? Explain.

9. In the above design (question 8), if you want to navigate through each of the nodes in the node list, what design pattern you’d most likely use? Explain.
10. Mention three fundamental design principles and explain the significance of each.
This page intentionally left blank. Whatever you write on this page will not be graded. Feel free to scribble on this page if you like, but don’t expect it to be graded.