

Student ID: _____

**Software Engineering Comprehensive Examination
Spring, 2002**

Answer any four of the following six questions. Please mark below the questions that you want graded. Use only the space provided. *Do not attach additional sheets or use the back of the exam.*

Circle the question numbers to grade: **1 2 3 4 5 6** (If you leave this blank, questions 1-4 will be graded.)

1. Identify the five phases of the software engineering lifecycle. In your opinion, which of the five phases is the most important to the success of the project? Justify your answer.

2. Two well-known software development lifecycle models are the Sequential (or Waterfall) Model and the Iterative (or Spiral) model. Describe the two approaches and give examples of the conditions under which each would be preferred over the other.

3. It is customary for an organization to hold a Phase Review at the end of each phase of the software engineering lifecycle (1) to look back to determine the quality of the artifacts produced during the phase and (2) to look forward to determine the readiness of the organization to proceed to the next phase. Describe what you would look for at the end of the design phase of a project, i.e., the exit criteria for the design phase. Also, describe how you would determine if you are ready to begin the phase after the design phase, i.e., what are the entrance criteria for the next phase?

4. Two software engineers are discussing the coding cycle for their current project. One engineer wants to design the code using a PDL (Program Design Language or Program Description Language) with a well-defined syntax to ensure that the code will compile after every refinement is made. The second engineer wants to perform the design using English language statements that can later be used as comments in the code. Choose a position and give reasons for your choice.

5. What is meant by the term “unit testing”? Who normally performs unit testing and what is its purpose? Discuss techniques for performing unit testing? What do you do if the unit you are testing has interfaces to other units that have not yet been developed?

6. Explain the concepts of module coupling and cohesion. Further, explain why these concepts have been important to the software engineering community for over 25 years, i.e., what software design problems require consideration of module coupling and cohesion?