ICS 52 - Introduction to Software Engineering
Midterm Exam – Winter, 2011

First Name: _____ Last Name: _____

1	2	3	4	5	Total

1. (12 points.) Name and define (in the context of software engineering) one desirable software quality, other than "maintainability" and "correctness," discussed in lecture or the textbook. Read question 2 before you answer this question.

2. (15 points.) Select one software process model described in lecture or the textbook, and describe how following that model promotes the software quality you selected in question 1. Be quite specific.

3. (15 points) According to the textbook, several processes are part of requirements engineering. One of them is *Requirements specification*: "Once the problem is understood, it has to be *described.*" Name and describe one of the other processes in requirements engineering that the textbook lists.

4. (30 points) Consider this statement: “One particular software process model puts the focus on risk.”

    a. Define “software process” as used in this sentence.

    b. Define “model” as used in this sentence.

    c. What software process model is being referred to?

    d. How does this software process model focus on risk?

    e. Describe one particular kind of risk in a software process and how this model can reduce that risk.

    f. In what sense could this software process model be described as “agile”?

5. (4 points) The textbook says that "Viewing software engineering as a branch of engineering is problematic." Why does the textbook suggest that software engineering is not best viewed as a branch of engineering?
    A. Software engineering does not usually deal with a well-defined problem.
    B. In software engineering the product is developed using a number of phases.
    C. In software engineering scientific techniques are used in creative ways.
    D. In mature engineering disciplines, such as bridge design, accidents sometimes occur.
    E. Software engineering involves products with multiple versions.

6. (4 points) Which of the following is the best definition of "software architecture"?
    A. The blue print of a system, giving the user a precise definition of the eventual functionality.
    B. A collection of system components that interact in a pleasing and attractive manner.
    C. The software equivalent of "cuisine" for cooking or "style" for music: a characterization of elements that are historically and culturally related.
    D. The hardware platform on which the software is run.
    E. Top-level decomposition of a system into major components, together with a characterization of how these components interact.

7. (4 points) The term "shrink wrapped" software was used in lecture, as a term to indicate
    A. Software that can be returned if it is not satisfactory.
    B. Not actually the software, but the medium (e.g. a CD) on which it is distributed.
    C. Software that is a "black box," that is, not understandable by the typical consumer.
    D. Software that is sold to the general public.
    E. All of the above.

8. (4 points) Which of the following is *not* an Extreme Programming practice?
    A. 40-hour week (the team works only 40 hours per week).
    B. Pair programming (all code is written by two programmers at one machine).
    C. Unit tests (programmers continuously write unit tests).
    D. Small releases (a simple system is first realized, then other versions are released in short cycles).
    E. Prototyping (an early working model is created in order to assess usability).

9. (4 points) In the write-up of the on-line wine store, the requirements are described as "an overview." The write-up says that a real-world commercial application would also have
    A. a test-plan for each class and method.
    B. an accompanying design document discussing the database design, screen layouts, and information flows.
    C. a prototype to identify and resolve risk.
    D. a companion document listing the programming staff and each person's responsibilities.
    E. a statement of architectural style (SAS).

10. (4 points) The textbook discusses Garvin's five definitions of software quality, each of which captures a different perspective. Which type of software quality relates to attributes of the software?
    A. Value-based definition
    B. Transcendent definition
    C. User-based definition
    D. Product-based definition
    E. Manufacturing-based definition

11. (4 points) Why is the waterfall model called an "ideal" model? (Choose the best answer.)
    A. It is the most likely to result in a successful software system.
    B. It is the best in practice.
    C. It is an descending model.
    D. It represents the software process as having no imperfections.
    E. It was the first software process model published.