

Name _____

Student number _____

CS 2SC3 and SE 2S03 Fall 2008

Quiz 1 Answer Key

Instructor: William M. Farmer

12 September 2008

You have 10 minutes to complete this quiz consisting of 1 page and 3 questions. You may *not* use your notes and textbooks, nor may you use any calculators or other electronic devices. Circle the *best* answer for the multiple choice questions, and write the answer in the space provided for the other questions. Good luck!

- (1) [2 pts.] What was wrong with the software of the Therac-25?
 - (a) It failed to detect that the target was not in place.
 - (b) It failed to detect that the patient was receiving radiation.
 - (c) It failed to prevent the patient from receiving an overdose of radiation.
 - (d) **All of the above.**
- (2) [4 pts.] What is the main *advantage* of using a system of computer-controlled value lifters instead of a traditional camshaft?

Answer: Using software, the system of computer-controlled value lifters can be programmed very flexibly. Moreover, the position of the values can be made to depend on engine speed, engine temperature, fuel type, etc. As a result, the opening and closing of the valves can be optimized for power, fuel economy, or a combination of the two in a way that is not possible with a traditional camshaft.

- (3) [4 pts.] What is the main *disadvantage* of using a system of computer-controlled value lifters instead of a traditional camshaft?

Answer: The system can only be as reliable as the software that is used to control the value lifters. In today's world, it is very difficult and expensive to produce highly reliable software. On the other hand, it is relatively easy to produce highly reliable camshafts.