CSE 8317: Software Reliability and Safety

Comprehensive Quiz (Final Exam)

May 7, 2003

(Date for video students: On or before May 21, 2003)

Student Name: _____

Circle One: — Class — NTU — Video —

Exam grade: _____

General Instructions

- This is a closed-book exam.

- Read exam questions carefully before answering them.

- There are three (3) questions, totaling 60 points. The point distribution is shown by each question.

- You have 1 hour to finish the exam.

- For video students: If you have something in doubt regarding exam questions, clearly state your assumptions, and then proceed.

- For video **proctors**: The exam should be taken by May 21, 2003. Please fax it to Prof. Tian at (214) 768-3085 or send it by overnight courier.

- **Good luck!**

I. General Concepts of SRE & SSE .... *(5 points each, 20 points total.)*

1. What's the main difference between "reliability" and "safety"?

2. Why is SRE mostly suitable for "medium-reliable" software systems?

3. What is the basis for assuming reliability "growth" in SRGMs?

4. What is hazard in the context of SSE?

II. SRE .... *(10 points each, 20 points total.)*

1. Describe the ideas of tree-based reliability model (TBRM) and discuss how can it be used in software development and testing.

2. When there is a mismatch between actual data and existing reliability models, what would you do to provide reasonably good reliability assessments and predictions?

III. SSE .... (10 points each, 20 points total.)

1. What is the basic difference between FTA and ETA? Why do we need both?

2. Describe the ideas of hazard elimination/reduction/control and damage reduction. Give some examples.