

PRINCE OF SONGKLA UNIVERSITY  
FACULTY OF ENGINEERING

**Final Examination:** Semester 2

**Academic Year:** 2004-2005

**Date:** 4<sup>th</sup> March 2005

**Time:** 13.30-16.30

**Subject Number:** 240-210

**Room:** R300

**Subject Title:** ETHICAL, LEGAL AND SOCIAL ISSUES IN COMPUTER  
PROFESSION (ประเด็นทางจริยธรรม กฎหมาย และ สังคมของวิชาชีพคอมพิวเตอร์)

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**Exam Duration:** 3 hours

**This paper has 10 pages and 7 questions.**

**Authorized Materials:**

- Writing instruments (e.g. pens, pencils).
- Books and paper sheets (e.g. dictionaries, texts, notebooks, handouts) are permitted.
- Calculators are **not** permitted.

**Instructions to Students:**

- *Answer questions in English.* Perfect English is **not** required.
- Attempt all questions.
- Any unreadable parts will be considered wrong.
- Write your name and ID on every page.

**Notebook submission:**

Notebooks *of those who had not submitted in the midterm exam* are to be submitted with the exam sheets.

Name \_\_\_\_\_ ID \_\_\_\_\_

Q.1 (Tick, ✓, all that you *agree* with;  
x, all that you do *not agree* with,  
leave blank for don't care)

Figure Q.1 shows the Bathtub curve of general failure rate  $\lambda(t)$  against time, exhibiting a 3-part curve.

Section 1 is a decaying exponential. To avoid this period it necessary to:

- a) Leave the product in its box until  $T_1$ , then unpack and switch on.
- b) Do not buy the product after it has been operated until  $T_1$ ,
- c) Use burn-in to identify and reject unreliable parts before assembly.
- d) Do not buy this product (3 Marks)

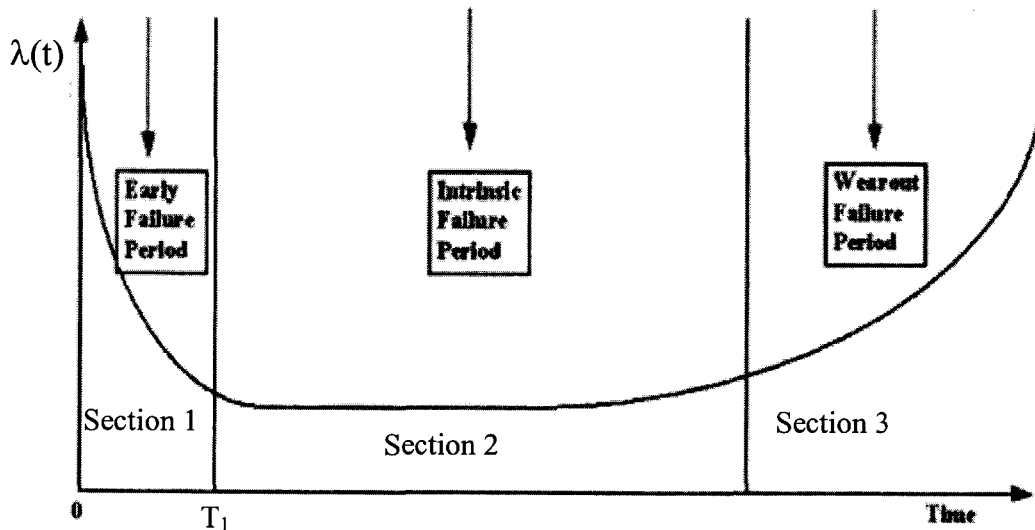
Section 2 is nearly constant. To *reduce the level* it is necessary to:

- a) Only use expensive reliable parts for everything
- b) Replace complete product when failure occurs
- c) Put up with (อดทนต่อ) the failure rate
- d) Identify failed part and redesign using more reliable part (3 Marks)

Section 3 is a rising curve. This can be used to:

- a) Withdraw from service and scrap (ทิ้งเป็นเศษขยะ)
- b) Repair and use for less demanding application
- c) Repair, repaint and sell as new product
- d) Sell to unsuspecting victim and disappear
- e) Withdraw from service and re-cycle (4 Marks)

**The Bathtub Curve**



Name \_\_\_\_\_ ID \_\_\_\_\_

Q.2

Value of Health and Safety

- Cost of accident generally at least ( ) times the cost of preventing it:  
( fill in the number of times) (2 Marks)

If accidents happen, which of these is likely to happen?  
 (Tick, ✓ , all that you *agree* with;  
 x , all that you do *not agree* with,  
 leave blank for don't care)

- Effects on other workers [ ]
- Should be ignored [ ]
- Fines/bad publicity [ ]
- Pretend the accidents did not happen [ ]
- Damage to plant [ ]
- Accidents cause pain and suffering [ ]
- Lost production [ ]
- Should restrict information about accidents [ ]
- Increased insurance premiums [ ]
- Affects the stock market [ ]
- Talked about it in the office [ ]

(10 marks)

Q.3

The following techniques or measures are all used in systems design.

For *safety critical* systems, mark those which you would:

- Recommend                    R
- Highly Recommend        HR
- Not Recommend            NR

Structured Methods, for example SADT, JSD Yourdon and MASCOT	
Computer-Aided Design tools	
Artificial Intelligence – fault correction	
Formal Methods, for example OBJ, temporal logic, VDM, Z, CSP, LOTUS	
Dynamic Reconfiguration	
Use of trusted/verified software modules and Components (if available)	
Defensive Programming	
Exception Handling	
Modular Approach	
Design and Coding standards	
Semi-formal Methods	
Structured Programming	

(12 marks)

Q.4

**There are four possible conditions:**

- 1. Ethical and Legal**
- 2. Not Ethical and Not Legal**
- 3. Not Ethical but Legal**
- 4. Ethical but Not Legal**

For the cases following, indicate which of the above best describes them:

Copying a copyright book for a student who is poor [ ]

Selling stolen CDs [ ]

Hacking into a teacher's files and showing the exam paper to all first year students [ ]

Copying another student's project and submitting as your own work [ ]

Cheating in examinations [ ]

Noisy neighbours [ ]

Passive smoking [ ]

Riding on a bus or train without paying [ ]

(16 marks)

Name \_\_\_\_\_ ID \_\_\_\_\_

Q.5

The following topics are the main reasons for system failure

Put them in order of importance (1,2,3,4,5):

Changes after Commissioning [ ]

Design and Implementation [ ]

Installation and Commissioning [ ]

Specification [ ]

Operation and Maintenance [ ]

(10 marks)

Name \_\_\_\_\_ ID \_\_\_\_\_

Q.6

What is Freedom of Information? (one sentence only)

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What is Data Protection? (one sentence only)

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Who does Data Protection apply to?

(Tick, ✓ , all that you *agree* with;  
x , all that you do *not agree* with,  
leave blank for don't care)

- Living persons [ ]
- Dead persons [ ]
- Children [ ]
- Babies [ ]
- Monkeys and gorillas [ ]

(5 marks)

Which types of manual record does data protection apply to?

(Tick, ✓ , all that you *agree* with;  
x , all that you do *not agree* with,  
leave blank for don't care)

- Paper in brief case [ ]
- Card index [ ]
- Paper files in filing cabinet [ ]
- Food labels on tins [ ]
- Papers on the desk [ ]
- Writing on notice board [ ]
- Writing on a white board [ ]

(5 marks)

Which types of computerized record does data protection apply to?

(Tick, ✓, all that you *agree* with;  
x, all that you do *not agree* with,  
leave blank for don't care)

- Laptop, palm [ ]
- Desk top [ ]
- Mainframe [ ]
- Thumb drive [ ]
- CD [ ]
- Envelope [ ]
- DVD [ ]
- Database [ ]
- Email [ ]
- PDA [ ]
- Digital Camera [ ]
- CCTV [ ]

(5 marks)



Q.7

The ACM Code of Ethics and Professional Conduct lists 8 moral imperatives.

The first is:

**1. Contribute to society and human well-being.**

Write down as many of the other 7 as you can remember”

- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_

(10 Marks)

Name \_\_\_\_\_ ID \_\_\_\_\_

Write down the *topics* of as many of the SPECIFIC PROFESSIONAL RESPONSIBILITIES as you can remember:

**1. Acquire and maintain professional competence**

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

(10 Marks)

By Dr. Richard N. Zobel

Name \_\_\_\_\_ ID \_\_\_\_\_