PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING
Department of Computer Engineering

Midterm Examination: Semester 1

Date: 2nd August, 2005

Subject Number: 240-322

Subject Title: Client/Server Distributed Systems

Lecturer: Aj. Andrew Davison

Academic Year: 2005-2006

Time: 13:30 – **15:30 (2 hours)**

Room: R300

Exam Duration: 2 hours

This paper has 2 pages.

Authorized Materials:

- Writing instruments (e.g. pens, pencils).
- Books (e.g. dictionaries) and calculators are **not** permitted.

Instructions to Students:

- *Answer questions in English.* Perfect English is **not** required.
- Attempt all questions.
- Write your answers in an answer book.
- Start your answer to each question on a new page
- Clearly number your answers.
- Any unreadable parts will be considered wrong.
- When writing programs, use good layout, and short comments; marks will not be deducted for minor syntax errors.

Question 1   (60 marks; 60 minutes)

a) Describe the typical components of a 2-tier client/server model. (10)

b) Give *five* advantages of the client/server approach. (15)

c) Give *three* disadvantages of the client/server approach. (10)

d) Explain the RPC mechanism. (15)

e) Explain transaction processing. (10)

Note: please include diagrams and examples where possible.

Question 2   (30 marks; 30 minutes)

Discuss the following P2P concepts:

a) decentralization and edge resources; (5)

b) micropayments; (5)

c) reputation and accountability; (5)

d) the tragedy of the commons; (5)

e) self-organizing systems; (5)

f) trust issues for censorship resistance. (5)

Note: please include diagrams and examples where possible.

Question 3   (30 marks; 30 minutes)

a) Write an ANSI C program that forks a child. The parent then opens the file `foo.txt` and writes it to `stdout`. The child opens the file `bar.txt` and also writes it to `stdout`. Both processes must use low-level file I/O commands. The parent does **not** wait for the child to finish. (20)

b) Explain what `wait()` does. Write a small code fragment to help your explanantion. (10)

--- End of Examination ---