PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

Department of Computer Engineering

Midterm Examination: Semester 2   **Academic Year**: 2004-2005

Date: 25th December, 2004   **Time**: 13:30 – **15:30 (2 hours)**

Subject Number: 240-527   **Room**: R200

Subject Title: Java Technology and Applications

Lecturer: Aj. Andrew Davison

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   (30 marks; 30 minutes)

a) What are the differences between a class and an object? (15)

b) What is a *polymorphic* data structure? (15)

Note: each answer should include diagrams and **small** code fragments where possible.

Question 2   (40 marks; 40 minutes)

Assume the existence of a database called StudentsDB, which contains one table called Enrollment. The table has three columns: one for the English versions of the students' names, one for their student ID (stored as an integer, e.g. 4620001), and the third column for a course number they are enrolled in (stored as an integer, e.g. 240527). The student name column is called name, the ID column is called ID, the course number column is called course.

Write a Java program that uses StudentsDB, JDBC, and the JDBC-ODBC bridge to print to standard output the names of all the Masters students doing the JTA course. You can assume that all Masters student IDs are > 4620000.

Note: do **not** explain how the database is configured to use the ODBC driver.

Question 3   (20 marks; 20 minutes)

a) Describe the POST HTTP method.   (10)

b) Explain how cookies are used in the HTTP protocol. (10)

Note: each answer should include diagrams and small fragments of HTTP requests and responses. Do **not** include program code in your answers.

Question 4   (30 marks; 30 minutes)

a) Explain the purpose of the init() and destroy() methods in servlets, including
    when they are called.   (10)

b) Write a servlet which accepts a POST request with a "user"="..." parameter.
    The value of the "user" name/value pair should be returned to the client as a line
    in a Web page. (20)

--- End of Examination ---