

## **Ph.D. Qualifying Exam Computer Engineering**

**Examiner:** Dr. H. Lee, SEM 327

**Text:**

The exam topics are covered in most texts for a course on Microprocessor. Examples of suitable texts are:

John F. Wakerly, *DIGITAL DESIGN: Principles & Practices*, 3rd Edition, Prentice-Hall, Inc., 2001.

I. Scott MacKenzie, *The 8051 Microcontroller*, 3rd Ed., Prentice Hall, Inc., 1999.

**Exam Rules:**

- 1- The duration of the exam is three hours.
- 2- The exam is open book, open notes, but must be completed without consulting any other person.

**Exam Topics:**

The exam covers combinational logic, flip-flops, architecture for a selected microcomputer, memory and I/O decoding, timing, interrupt controllers, microcontrollers. Specifically, they are:

- 1- Combinational logic analysis and design
- 2- Sequential logic analysis and design
- 3- State machine design and analysis
- 4- Logic minimization algorithms
- 5- Block diagrams to represent a system's main modules and their interconnections
- 6- Assembly language programming
- 7- I/O interface