**256 Exam #1 Content:**

**- Hardware Abstractions**

- Abstraction Definitions

- Transistors

- Logic Gates

- Circuits / Schematics

- Truth Tables

- Logic Expressions

- Sum-of-Products

- Logic Simplification

**- Data Abstractions**

- Unsigned Binary

- Hexadecimal

- Non-numeric Data

- ASCII / Unicode

- Color Models (RGB)

- Sign Magnitude

- Two’s Complement

- Fixed Point

- Floating Point (14-bit)

**- Machine Abstractions**

- Micro-programming

- Machine Language

- Stored Program Architecture

- Memory Hierarchy

- Processor Cache

- Spatial & Temporal Locality

- Pipelining & Hazards

- Parallelism

- Superscalar

- Multiple Cores

**Exam #1 Format:**

- True/False (~25)

- Paragraph – explain an idea or concept

- Number conversions – show your work!

- Circuits and Logic Simplification

- Machine Abstractions

**True / False Examples:**

T F The control unit is one of the three main components of the stored program architecture.

T F Any positive voltage represents a logical 1.

T F The instruction register holds the machine language instruction that is being executed.

T F The program counter holds the main memory address of the next micro-program instruction to be executed.

**Reference:**

n 2n 2-n

0 1 1

1 2 0.5

2 4 0.25

3 8 0.125

4 16 0.0625

5 32 0.03125

6 64 0.015625

7 128 0.0078125

8 256 \*

9 512 \* \* *You should not need these values.*

10 1024 \*

11 2048 \*

12 4096 \*

13 8192 \*

14 16384 \*



