**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 \*



