There are 5 groups of questions. Full score is 110 points. You will be permitted to use a 2-sided data sheet and a simple calculator. For maximum credit, show and organize all your work neatly and clearly.

Topics covered in this Final include:

A. True/False Questions on Fundamentals (50 points)
B. Embedded Systems Applications (5 points)
C. Hardware Interfacing Methods (20 points)
D. Performance Tuning and Measurement (20 points)
E. PIC32MX Timing Configuration (15 points)
Q1. This group includes 25 True-False questions. If your response to a question is False, you are required to explain briefly, but in sufficient details, why you think the statement is False. All of these questions come from the Di Jasio textbook, with roughly 2/3 of them emphasizing “Day 5” through “Day 7” Chapters of the book.

Q2. This Question will ask you to, based on your current understanding of embedded systems, suggest a “killer app” that you believe will have the most significant technical and societal impacts. Additional credit beyond the 5 points allocated will be considered if you can come up with worthwhile, “out-of-the-box”, or even technologically disruptive, ideas.

Q3. This Question relates to hardware interfacing methods used in the class. As we learned, to reduce power consumption, the PIC32MX, like many other embedded processors, uses 3.3V as the supply voltage, and has an operating range of [2.0V, 3.6V] based on 3V CMOS technology. You should review the lecture materials, as well as your experience with the lab work.

Q4. This Question addresses performance tuning and measurement of the PIC32MX. Namely, this means the “Day 7” Chapter. You need to review the various performance tuning options discussed in the class and (if you did the Software Lab Project you should know) the methods involved. Things such as Wait States, pre-fetch, cache, as well as their corresponding function calls and SFRs (if applicable), should be reviewed.

Q5. This Question will cover the PIC32MX’s clock sources and the procedure needed to obtain the desired system and peripheral clock rates. You need to familiarize yourself with PIC32MX’s clock module and the involved components. You will be asked to identify the appropriate path of processing, as well as ways to accurately specify the configuration in the software code.

Note: I decided to omit coding questions in this Final Exam to allow everyone the maximal time to write up the best Term Paper possible. Take this opportunity and maximize your grade!