Sample Questions for Final Exam

The following list of questions is designed to give you an idea of the difficulty level of questions that I will ask on the final exam. This list is not comprehensive – there are questions I could ask that are not on here. You are responsible for all the material we have covered in this course, in class, in daily practice homework and in online quizzes. But this should serve as a guide to the level of mastery I will be looking for.

The final exam is comprehensive, but this handout only provides sample questions for the most recent material. Therefore you should also review the sample questions for each of the three midterms. If you need to obtain copies of these, they are available on the class website.

You will be allowed to use a single sheet (8”x11”) of notes (both sides) and a graphing calculator during the exam. No other references will be allowed.

I will not answer further questions about what will or will not be on the exam.

1 If you borrow $12,000 for 5 years at 4% interest, what will the monthly payments be?

2 If you borrow $2000 and make the minimum payment of 2.5% each month on a credit card with an 18% APR, what will your balance be after 3 years? How long will it take before the balance reaches $1000?

3 How much money will you need to have saved for retirement in an account that earns 4% interest if you want to withdraw $50,000 per year for 20 years?

4 You find an investment that earns 6% interest. You have 35 years to save for retirement, and after you retire you want to be able to withdraw $2000 each month for 25 years. How much should you save each month until you retire?

5 Let $A = \{2, 4, 6, 8, 10\}$ and $B = \{1, 2, 3, 4, 5\}$, where the universal set is $U = \{x | x \text{ is a positive integer and } x \leq 99\}$.

(a) What is $A \cup B$?
(b) What is $A \cap B$?
(c) What is $A \cap B'$?
(d) What is $n(A')$?
(e) What is $n(A \times B)$?
(f) What is $n(A \times B')$?

6 Assuming that no phone numbers are prohibited, what is the maximum number of 7-digit phone numbers?
7 If a 5-digit passcode cannot have any repeated digits, how many such passcodes are possible?

8 Washington State License plates have 3 digits followed by 3 letters.
(a) If no license plates are prohibited, how many possible plates are there?
(b) If numbers may be repeated but not letters, how many possible plates are there?

9 A certain lottery game asks you to pick 5 numbers out of 40. No number can be repeated, and the order in which you pick the numbers does not matter. (So, for example, ‘1-3-19-21-40’ and ‘3-21-1-40-19’ would really be the same lottery ticket.) How many different lottery tickets are possible in this game?