Problem Set 10: Discrete Mathematics Name_____ ID_____

1. A multiple choice test contains 10 questions. There are four possible answers for each question.

(a) How many ways can a student answer the questions on the test if every question is answered?

(b) How many ways can a student answer the questions on the test if the student can leave answers blank?

2. How many strings are there of four lowercase letter that have the letter x in them?

3. How many string of the three decimal digits

(a) do not contain the same digit three times.

(b) begin with an odd digit.

(c) have exactly two digits that are 4s.

4. How many permutations of the characters in the word COMPUTER are there? How many of these end in a vowel?

5. How many distinct permutations of the characters in ERROR are there?

6. In how many ways can you seat 11 men and eight women in a row if no two women are to sit together?

7. A set of four coins is selected from a box containing five dimes and seven quarters.

(a) Find the number of sets which has two dimes and two quarters.

(b) Find the number of sets composed of all dimes or all quarters.

8. How many integers from 1 to 1000 are either multiples of 3 or multiples of 5?

9. In a class of students undergoing a computer course the following were observed. Out of a total of 50 students: 30 know Pascal, 18 know Fortran, 26 know COBOL, 9 know both Pascal and Fortran, 16 know both Pascal and COBOL, 8 know both Fortran and COBOL, 47 know at least one of the three languages.

a. How many students know none of these languages?

b. How many students know all three languages?