RUTGERS
UNIVERSITY | NEWARK

Math 237
Discrete Structures

Fall 2017

Quiz #8

Monday, December 4 2017

Duration: 20 min

NAME: _____

Please write clearly and properly.

Problem	Grade
1	
2	
3	
Total	

Problem 1 (~ 4 points.)**.**

No explanations are required for this problem.

Recall that a *byte* is a string of 8 bits, where a *bit* is a 0 or 1.

(1) How many different bytes start with 01 and end with 10?

(2) How many different bytes start with 010 or end with 001?

(3) How many different bytes contain exactly two 1's?

(4) How many different bytes are there whose sum of bits is less than 3?

Problem 2 (~ 4 points.)**.**

Consider the alphabet $X = \{A, B, C, D, E\}$.

(1) How many 3-letter words can be written with this alphabet?

(2) How many 5-letter words can be written with this alphabet, with the restrition that no letter appears more than once in a word?

(3) How many 3-letter words can be written with this alphabet, with the restrition that no letter appears more than once in a word?

(4) How many ways can one choose 3 letters from the alphabet X, ignoring order?

Problem 3 (~ 2 points.)**.**

How many integers are there between 20 and 400 that are multiples of 2 or multiples of 5? Explain.