

COT 3100 Quiz #3: Counting, Probability (Week of Apr 10, 2023) – R, F Version

Last Name: _____ **First Name:** _____

Circle Rec: **R10:30am** **R4:30pm** **F11:30am**

1) (5 pts) How many permutations are there of the letters in the word "SMUSHROOMS"? Please leave your answer in factorials, combinations and/or powers.

2) (7 pts) A faulty car odometer proceeds from digit 5 to digit 8, always skipping digits 6 and 7, regardless of position. For example, after traveling one mile, the odometer changed from 003859 to 003880. If the odometer now reads 003459, how many miles has the car actually traveled? (Note: $8^3 = 512$.)

3) (5 pts) How many non-negative integer solutions are there to the equation

$$a + b + c + d + e + f \leq 30?$$

Please leave your answer in factorials, combinations and/or powers.

4) (8 pts) A bag of prizes contains 40% transformer toys and 60% pez dispensers. Unfortunately, 10% of the transformer toys are defective and 6% of the pez dispensers are defective. An item is selected at random from the bag and is defective. What is the probability that the item is a transformer toy? **Please answer in the form of a fraction reduced to lowest terms.**
