ELEC ENG 3TQ3 SECTION CO2 – Fall 2020

Assignment #1

Due Date – October 5th 8:30 a.m.

**Question 1** (10 points): Four engineers: Anna, Brian, Cynthia and David are taking PEO exam. Let A denote event that Anna passed the exam, let B denote event that Brian passed the exam, let C denote event that Cynthia passed the exam and let D denote event that David passed the exam. Using set operations describe the following events:

a)     Nobody passed the exam

b)    Anna passed the exam

c)     Only one engineer passed the exam

d)    At least one engineer passed the exam

**Question 2 (**10 points): Canadian Tire has 30 unlabeled fertilizer bags. Twenty-four (24) of these bags are filled with the lower quality fertilizer while six (6) bags are filled with the higher quality fertilizer. If John bought 4 bags what is the probability that he got at least 2 high quality fertilizer bags?

**Question 3 (**10 points): Two coins A and B are tossed 10 times each. When tossing coin A the observer recorded 6 tails and 4 heads. When tossing coin B the observer recorded 8 tails and 2 heads.

a)     What is the probability of getting 6 tails and 4 heads if coin A is fair.

b)    What is the probability of getting 8 tails and 2 heads if coin B is fair.

c)     If you know that only one coin is fair, which one would you pick as a fair coin? Justify your answer.

d)    Assuming that you take the role of observer and are given two coins of which one is fair and the other is false. Propose an experiment consisting of up to total 100 tosses including both coins which you will use to determine which coin is fair. Select the number of tosses for each coin and explain in one paragraph how you will decide which coin is fair.