Short Quiz #1 (17-Jan): CSC-2259: Discrete Structures, Sp 2019
Your answers must be to the point. Total = 20; marks for each question is shown in [ ].

LastName: FirstName

1. Suppose we have 10 colored paintings of famous kings in ornamental clothing. Also, suppose that 8 paintings have red color in them and 7 have blue color in them. How can this happen? [2]

2. Give the values for maximum and minimum of the following in terms of A and B. Also, fill-in the conditions for the maximum (minimum) to happen. [2+2+2+2]

   (a) Maximum of $|A \cup B|$ = ··· ··· and this happens when ··· ···

   (b) Minimum of $|A \cup B|$ = ··· ··· and this happens when ··· ···

   (c) Maximum of $|A \cap B|$ = ··· ··· and this happens when ··· ···

   (d) Minimum of $|A \cap B|$ = ··· ··· and this happens when ··· ···

3. Complete the sentences below by filling the blanks; you can use only $|A|$, $|B|$, $|A \cup B|$, and $|A \cap B|$ to fill the blanks. The resulting sentences should be **true** and **different**. [2]
   - Maximum of ..... implies minimum of .....
   - Maximum of ..... implies minimum of .....

4. Suppose we have a basket of fruits and each fruit is sweet or crunchy or both. Suppose 8 of the fruits are sweet and 7 of the fruits are crunchy.

   (a) What is the maximum possible number of fruits in the basket? [1]

   (b) What is the minimum possible number of fruits in the basket? [1]

   (c) Say something useful about the fruits in the basket when their number is maximum. Do the same when their number is minimum. [2+2]

   Case of maximum:

   Case of minimum:

5. Which of (a)-(d) in Problem 2 explains your answer in Problem 4(a)? [1]

   Which of (a)-(d) in Problem 2 explains your answer in Problem 4(b)? [1]