

# Chemistry 351

## Quiz #1

September 4, 2019

Name: \_\_\_\_\_

Student Number: \_\_\_\_\_

Section Number: \_\_\_\_\_

TA: \_\_\_\_\_

### INSTRUCTIONS:

This quiz consists of 8 questions on 3 pages. Please make certain that your quiz is complete.

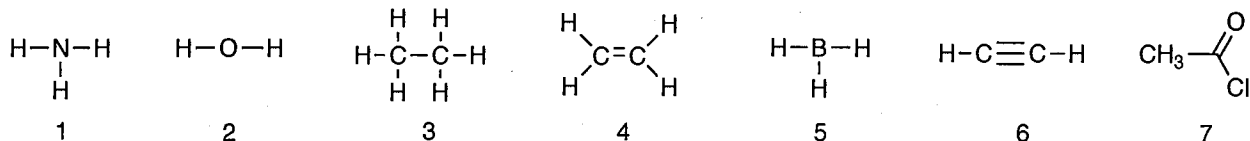
Write your name, student number, and section number **on both the quiz and answer sheet.** Be certain to bubble in your PID digits on the answer sheet. The absence of any of these identification items will result in the deduction of 2 points from your score.

Questions 1- 6 are each worth 1 point. Question 7 and Question 8 are each worth 2 points.

Write your answers to Questions 1-6 on the enclosed answer sheet. Write your answer to Question 7 and Question 8 in the space provided on this quiz.

When you complete the quiz, insert your answer sheet into your quiz and then hand both in on the bench in front of the lecture hall in the spot indicated by your section number.

Question 1 and Question 2 refer to the following structures:



1. Identify the molecule or molecules having an atom with a valence of 3.

- a. 1      b. 2      c. 3      d. 4      e. 5      f. 6      g. 7  
 h. 6 and 7      i. 1 and 5      j. 4 and 7

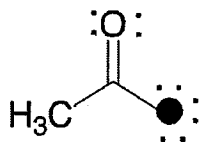
2. Which molecule possesses an atom (other than hydrogen) that lacks a filled octet in its valence shell?

- a. 1      b. 2      c. 3      d. 4      e. 5      f. 6      g. 7

3. The most electronegative elements in the periodic table are generally found:

- a. toward the left in a horizontal row and toward the top in a column  
 b. distributed randomly throughout the table  
 c. toward the right in a horizontal row and toward the top in a column  
 d. toward the left in a horizontal row and toward the bottom in a column  
 e. toward the right in a horizontal row and toward the bottom in a column

Questions 4 and 5 refer to the following molecule:



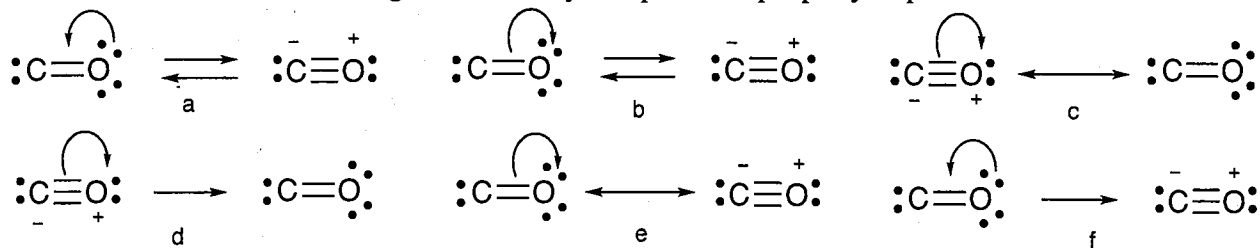
4. What is the formal charge on the shaded oxygen atom?

- a. +2      b. +1      c. 0      d. -1      e. -2

5. What is the bonding between the carbon atom and shaded oxygen atom?

- a. a single (1) bond      b. a double (2) bond      c. a 1 1/2 bond      d. a 1 1/3 bond

6. Which one of the following resonance hybrid pairs are properly depicted:

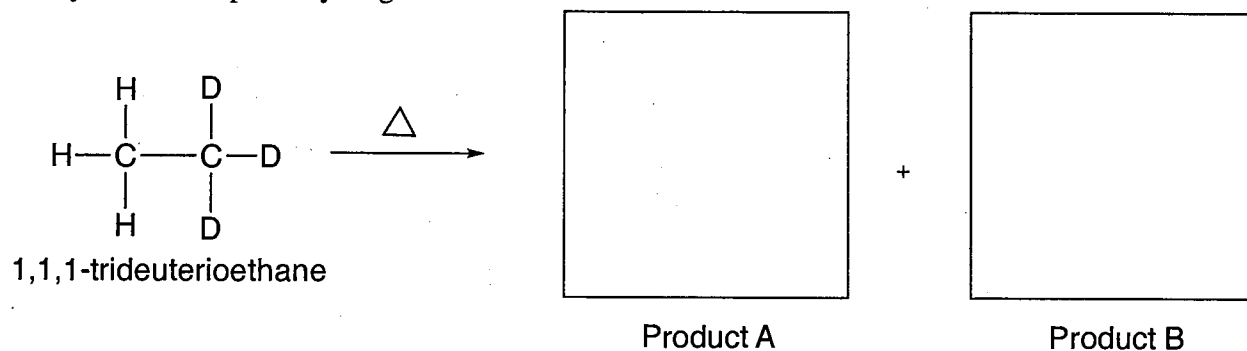


7. When 1,1,1-trideuterioethane is heated to a high temperature:

(1pt) a. Provide in the labeled boxes the structure of the products formed in the reaction.

(1pt) b. Insert arrows showing the flow of electrons in the reaction.

Reminder: Deuterium (D) has an atomic number of one, an atomic weight of 2, and is the stable heavy atom isotope of hydrogen.



8. (1pt) a. In the labeled box, provide the Lewis dot structure for Resonance Hybrid B of dimethyl sulfoxide with ALL electrons shown and also label the appropriate atom(s) with the correct formal charge(s).

(1pt) b. Insert the arrow(s) that show the flow of electrons in Resonance Hybrid A that lead to Resonance Hybrid B of dimethyl sulfoxide.

