

Chemistry 351

Quiz #2

September 12, 2018

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 is worth 2 points. Question 8 is worth 2 points.

Write your answers to Questions 1-5 on the enclosed answer sheet. **Write your answers to Questions 6-8 in the space provided on this quiz.**

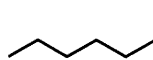
When you complete the quiz, insert your answer sheet into your quiz and then hand both in on the bench in front of the lecture hall in the spot indicated by your section number.

1. Identify which two of the following statements are correct:

1. The C-C-H bond angle in ethane is 109.5°
2. The C to C bond strength in ethyne is three times the C to C bond strength in ethane.
3. The C-C-H bond angle in ethyne is 120°
4. Rotation around the C to C bond axis is restricted in ethene.
5. Ethyne possesses a planar geometry.

(a) 1,2 (b) 1,3 (c) 1,4 (d) 1,5 (e) 2,3 (f) 2,4 (g) 2,5 (h) 3,4 (i) 3,5 (j) 4,5

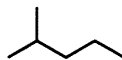
Questions 2-4 refer to the following molecules:



1.



2.



3.



4.



5.

2. Which of the molecules are structural (constitutional) isomers?

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

3. Which molecule or molecules possess a single methine hydrogen?

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

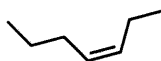
4. Which molecule or molecules contains only methylene hydrogens?

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

5. Which of the following molecules are hydrocarbons?



1.



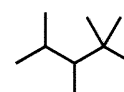
2.



3.



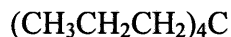
4.



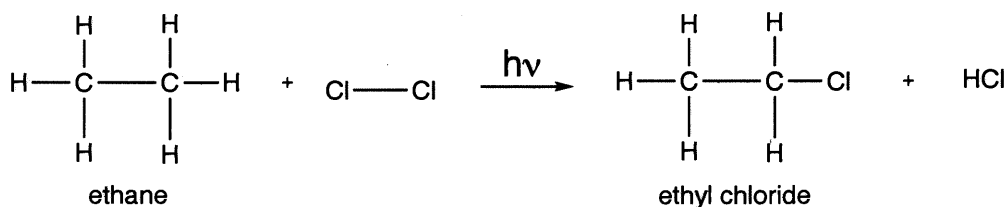
5.

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

6. (1 pt) In the space provided below, draw the line structure (do not show hydrogen atoms) that corresponds to:



Question 7 and Question 8 refer to the following light-induced reaction of ethane with chlorine leading to ethyl chloride and HCl:



7. (2 pts) In the space provided below: (a) provide the two reactants, (b) the products, (c) the conversion arrow, and (d) three arrows that correctly depict the flow of electrons during the chain propagation step leading to ethyl chloride.

8. (2 pts) In the space provided below: (a) provide the two reactants, (b) the product, (c) the conversion arrow, and (d) two arrows that correctly depict the flow of electrons during the chain termination step leading to *n*-butane ($\text{CH}_3(\text{CH}_2)_2\text{CH}_3$).