Chemistry 351

Quiz #4

September 25, 2019

Name: _____

Student Number: _____

Section Number: _____

TA: _____

INSTRUCTIONS:

This quiz consists of 7 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 4 points.

Write your answer to Question 1-6 on the enclosed answer sheet. **Write your answers to Questions 7 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.

Questions 1-2 refer to the following molecules **1-5:**

1-chloro-2,2-dimethylpropane	1-chloropentane	2-chloro-2-methylbutane
1	**2**	**3**

2-chloropentane	1-chloro-2-methylbutane
4	**5**

1. Identify the molecule that you predict to have the highest boiling point (bp):

(a) 1 (b) 2 (c) 3 (d) 4 (e) 5

2. Identify the molecule that you predict will give the most stable carbocation during reaction with water:

(a) 1 (b) 2 (c) 3 (d) 4 (e) 5

Questions 3 - 4 are to be answered from the following possibilities:

methane	*n*-nonane	propane	*n*-octane	*n*-decane	*n*-hexane	*n*-butane	*n*-heptane	ethane	*n*-pentane
1	2	3	4	5	6	7	8	9	10

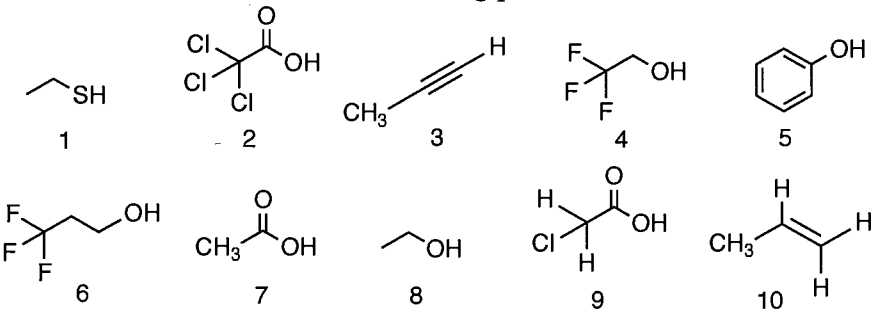
3. Identify all of the molecules that are stripped off as gases during petroleum refining.

(a) 2,5 (b) 2,4,5 (c) 1,3,7,9 (d) 1,3,7,9,10 (e) 2,4,5,6,8,10 (f) 2,4,5,6,7,8,10

4. Which is the second most abundant (14%) hydrocarbon found in Marcellus shale gas?

(a) 1 (b) 2 (c) 3 (d) 4 (e) 5 (f) 6 (g) 7 (h) 8 (i) 9 (j) 10

Questions 5-6 are to be answered from the following possibilities:



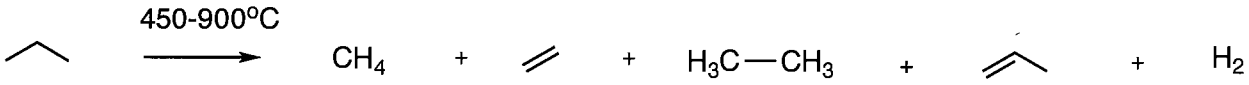
5. Identify the Brønsted-Lowry acid with the lowest pK_a:

(a) 1 (b) 2 (c) 3 (d) 4 (e) 5 (f) 6 (g) 7 (h) 8 (i) 9 (j) 10

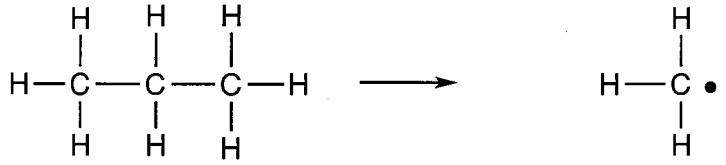
6. Identify the Brønsted-Lowry acid with the highest pK_a:

(a) 1 (b) 2 (c) 3 (d) 4 (e) 5 (f) 6 (g) 7 (h) 8 (i) 9 (j) 10

7. (4 pts total) The following questions refer to the cracking of propane:



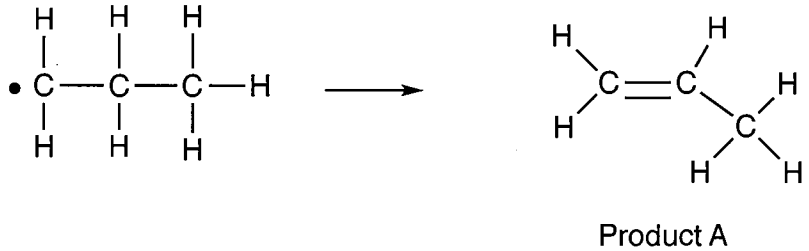
a. For the following chain initiation step, insert TWO ARROWS that depict the flow of electrons during the conversion of propane to Free Radical A and Free Radical B. In the labeled box, provide the structure of Free Radical B.



Free Radical A

Free Radical B

b. For the following chain propagation step, insert THREE ARROWS that depict the flow of electrons during the conversion of propyl radical to Product A and Free Radical C. In the labeled box, provide the structure of Free Radical C.



Product A

Free Radical C