**UCI DEPARTMENT OF ORGANIC CHEMISTRY PEER TUTORING REVIEW SESSION FEEDBACK EVALUATION**

<table>
<thead>
<tr>
<th>Quarter: Winter 2018</th>
<th>Date: 3/14/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class: Professor Guan</td>
<td>Final Review</td>
</tr>
<tr>
<td>Tutors' Names: Lester Gopar, Thinh Nguyen, Lina Nguyen</td>
<td></td>
</tr>
</tbody>
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**COMMENTS/SUGGESTIONS**

- **Lester Gopar**

- **Thinh Nguyen**

- **Lina Nguyen**

**What worked best?**

**What could be improved?**

**What would you like to see next time?**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree or Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>This review was interactive and engaging</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>Comments</td>
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<td>The presentation volume was acceptable.</td>
<td>☐</td>
<td>☐</td>
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<td>Comments</td>
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<td>The presentation was visually clear and logically organized.</td>
<td>☐</td>
<td>☐</td>
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<td>The review improved/reinforced your understanding of the material.</td>
<td>☐</td>
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<td>Comments</td>
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<tr>
<td>The quality of the review packet was excellent.</td>
<td>☐</td>
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Please fill out this evaluation, even if you plan to leave early. Thank you very much.
This page is intentionally left blank on purpose. You can use this page as scratch work if you want.
Final Review

Fill in the missing reagents

1. Fill in the missing reactants, products, or intermediates for each reaction in the boxes provided below.

2. In Chapter 15, you learned about polymerization. Using your understanding, fill in the missing monomer used to synthesizes the polymer below.
3. Radicals: Identify if the following statement is true or false

A 3° radical is more stable than a 2° or 1° radical

4. Complete the reaction. Find the product.

\[ \text{Cyclic } + \text{Br}_2 \xrightarrow{h\nu \text{ or } \Delta} \]

5. Draw the major product formed when the following starting material is heated with Br\textsubscript{2}

\[
\begin{array}{c}
\text{Starting Material} \\
\xrightarrow{\text{Br}_2 \Delta} \\
\text{Major Product}
\end{array}
\]

6. Draw the major product and the mechanism

\[ \text{Cyclic } \xrightarrow{\text{NBS } h\nu \text{ or ROOR}} \]
7. Fill in the missing reagents
8. Rank the following compounds from most to least
   a. Fastest to slowest reaction with HCl

   [Chemical structures]

   b. Highest to lowest oxidation state

   [Chemical structures]

   c. Highest to lowest frequency C=O stretch

   [Chemical structures]

   d. Strongest to weakest acid

   [Chemical structures]

9. In the box provided, write the number of signals you expect to see in the NMR spectrum.

   [NMR spectra with blank boxes for signal counts]

   \(^1\text{H}\) boxes

   \(^{13}\text{C}\) boxes
10. Identify the 4 possible products of the following reaction and circle the major product

\[ \text{HBr} \quad -80^\circ C \]

11. Provide the reagents, intermediates necessary to complete the following syntheses

a. 

\[ \text{[Structure]} \rightarrow \text{[Structure]} + \text{enantiomer} \]
12. Circle your answer and choose the best reason from the list for your answer.

**Reasons:** electronegativity, inductive effects, radical stability, resonance, ring strain

a. Most electrophilic

Best reason:

\[
\begin{align*}
\text{H}_3\text{C} & \text{C} \text{NHCH}_3 \\
\text{H}_3\text{C} & \text{C} \text{CH}_3
\end{align*}
\]

b. Most acidic

Best reason:

\[
\begin{align*}
\text{C} & \text{OH} \\
\text{Cl} - \text{C} & \text{OH}
\end{align*}
\]

c. Most basic

Best reason:

\[
\begin{align*}
\text{NaOH} \\
\text{NaNH}_2
\end{align*}
\]

d. Faster reaction with \( \text{Br}_2 \) in the presence of heat and light

Best reason:

\[
\begin{align*}
\text{C} \\
\text{CH}_3
\end{align*}
\]

e. Least stable resonance structure

Best reason:

\[
\begin{align*}
\text{C} & \text{O} \\
\text{C} & \text{O} \theta
\end{align*}
\]

f. Least electrophilic

Best reason:

\[
\begin{align*}
\text{O} \\
\text{O}
\end{align*}
\]
13. Identify whether the molecules are aromatic, not aromatic, or anti-aromatic through observing its resonance and number of pi electrons.

a)

\[
\begin{array}{c}
\text{N}\hfill \\
\text{H} \\
\text{H} \\
\text{H} \\
\text{H} \\
\end{array}
\]

b)

\[
\begin{array}{c}
+ \\
\text{H} \\
\text{H} \\
\text{H} \\
\text{H} \\
\end{array}
\]

c)

\[
\begin{array}{c}
\text{H} \\
\text{H} \\
\text{H} \\
\end{array}
\]

14. Which compound is more stable and why?

\[
\begin{array}{c}
\text{O} \\
\text{H} \\
\text{H} \\
\text{H} \\
\text{H} \\
\end{array}
\] \quad \begin{array}{c}
\text{H} \\
\text{H} \\
\text{H} \\
\end{array}
\]
15. Which compound is more acidic and why?

16. Draw a pyridine and explain why it's less or more resonance stabilized than benzene in an electrophilic aromatic substitution reaction.

17. Complete this synthesis problem.