Academic Honesty Policy. Academic honesty is strictly enforced on quizzes, exams, and other aspects of this course. Academic dishonesty will result in a failing grade in the class and a letter in the student's file. Activities constituting academic dishonesty include:

Cheating
- Copying from others during an examination.
- Communicating exam answers with other students during an examination.
- Offering another person's work as one's own.
- Taking an examination for another student or having someone take an examination for oneself.
- Tampering with an examination after it has been corrected, then returning it for more credit.
- Using unauthorized materials, prepared answers, written notes, or concealed information during an examination.

Dishonest Conduct
- Stealing or attempting to steal an examination or answer key from the instructor.
- Allowing another student to copy off of one's own work during a test.

Collusion
- Any student who knowingly or intentionally helps another student perform any of the above acts is subject to discipline for academic dishonesty.

I understand and will abide by this academic honesty policy: __________________________ (signature)

1. Draw the Lewis structure for trimethylamine N-oxide [(CH₃)₃NO]; make sure to show all formal charges and lone pairs of electrons. (4 pts)

\[
\begin{align*}
\text{O}^- & \quad \text{CH}_3^- \\
\text{N}^+ & \quad \text{CH}_3 \\
\text{C} & \quad \text{H}_3
\end{align*}
\]

What are the hybridizations of the nitrogen and oxygen atoms? \textit{sp}³, \textit{sp}³

What is the geometry of the molecule and the approximate C–N–C and C–N–O bond angles? \textit{tetrahedral}, 109.5°

2. Follow the curved arrows to draw a second resonance structure: (Smith 1.46b, 2 pts)

\[
\begin{align*}
\text{O}^- & \quad \text{CH}_3^- \\
\text{C} & \quad \text{H}_3 \\
\text{C} & \quad \text{H}_2
\end{align*}
\]

3. Draw all reasonable resonances structures: (Smith 1.49d, 2 pts)

\[
\begin{align*}
\text{O}^- & \quad \text{CH}_3^- \\
\text{C} & \quad \text{C} = \text{C} \quad \text{C} = \text{C} \\
\text{C} & \quad \text{H}_3 \\
\text{C} & \quad \text{H}_3 \\
\text{C} & \quad \text{H}_2
\end{align*}
\]

4. Draw in all H atoms and lone pairs: (Smith 1.62c, 2 pts)