1. (12) Complete each of the following acid-base (or Lewis acid-base) reactions (2 pts each). Use curved arrows to show the flow of electrons in each reaction (2 pts each).

\[
\begin{align*}
\text{H-N:} & + \text{H-Br} & \rightarrow & \text{H-N-H} + \cdot \beta r \cdot \\
\text{H}_3\text{C} & + \text{F} & \rightarrow & \text{CH}_3 \text{O} \cdot \beta \cdot \text{B-F} \\
\text{H}_3\text{C} & + \text{H}_2\text{O} & \rightarrow & \text{H-C-} \cdot \beta \cdot \text{H} \\
\end{align*}
\]

2. (4) Arrange the following compounds in order of decreasing acidity:

(1) CH₃CH₂CH₃  (2) CH₃CH₂OH  (3) CH₃CH₂NH₂  (4) H-C-OH

\[
\begin{align*}
(4) & > (2) & > (3) & > (1) \\
\text{strongest} & & & \text{weakest}
\end{align*}
\]

3. (3) Which one of the following compounds is the strongest base?

\[
\text{CH}_3^- \quad \text{NH}_2^- \quad \text{HO}^- \quad \text{F}^- \quad \text{Cl}^- \quad \text{Br}^- \quad \text{I}^-
\]

4. (3) Which one of the following compounds has the most acidic C-H bonds?

\[
\text{H}_3\text{C} \equiv \text{C-CH}_3 \quad \text{H}_3\text{C} \equiv \text{C}_2\text{H}_5 \quad \text{CH}_4 \quad \text{cyclohexane} \quad \text{cyclopentadiene}
\]

5. (3) Which one of the following compounds is a strong Lewis acid?

CH₃CH₂CH₃  CH₃NH₂  (CH₃)₂NH  AlCl₃  CH₃CH₂OCH₃  HO⁻