First Test on Organic Chemistry, Chem 277, Fall 1999
Sep. 22, 1999, for 100 points

(1) for 10 pts. Draw a Lewis structure for each species:

a) \[ \text{HCONH}_2 \]

b) \[ \text{CH}_2\text{CHNNCH}_2^+ \]

(2) for 16 pts. Draw the resonance forms for the following structures, denote all formal charges and label the major resonance contributor.

a) 

b) 

Reserved

Prep. 00
Van Der Well
(5) for 10 pts. Label the reactants as Lewis acids (La) or Lewis bases (Lb), as electrophiles (E) or nucleophiles (Nu), and by using curved arrows show the movement of electron pairs; denote the movement as electrophilic or nucleophilic attack.

\[
\text{nucleophilic attack}
\]

\[
\begin{align*}
\text{CH}_3-\text{CH}=\text{CH}_2 + \text{BF}_3 & \rightarrow \text{CH}_3-\text{CH}-\text{CH}_2-\text{BF}_3 \\
\text{Lb} & \quad \quad \text{La} \\
\text{Nu} & \quad \quad \quad \text{E}
\end{align*}
\]

(6) for 10 pts. Give the IUPAC name of the following alkane and give two examples of its constitutional isomers.

\[
\text{total 15C!}
\]

\[
\text{4,5-diethyl-3,6-dimethyl none}
\]

\[
\text{total 15C!}
\]

\[
\text{Pre Vet 00}
\]

\[
\text{Van Der Weel}
\]
(7) for 4 pts. Give the line-angle structure of the alkane shown below in a Newman projection. Draw a Newman projection of its eclipsed conformer having the highest energy.

(8) for 6 pts. Draw both chair conformers of trans-1-methyl-2-methyl-cyclohexane and of its cis- isomer. Denote the axial and equatorial C – CH₃ bonds.