Dr. Burns

11/23/15

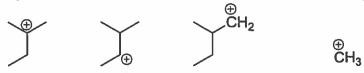
120 points possible

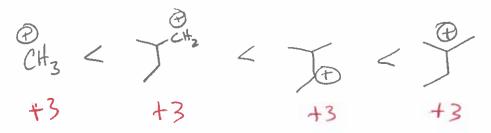
Page #	Points
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Total pts	

Signature:

Printed Name:

1) Rank the following carbocations in order of increasing stability. List by lowest stability first, then intermediate stability, then most stable. (12 pts)





2) Rank the following alkenes in order of increasing stability. List by lowest stability First, then intermediate stability, then most stable. (10 pts)

3) Classify each solvent as protic or aprotic. (10 pts)

(CH3)2CHOH CH2Cl2 NH(CH3)2 NEt3 Tetrahydrofuran

Proble aproble proble aproble aproble

+2 +2 +2 +2 +2

4) Give the elimination organic product(s) for the following reactions. (16 pts)

$$\begin{array}{c|c} & & & \\ \hline \end{array} \qquad \begin{array}{c} & 2\,\text{NaNH}_2 \\ & & \\ \hline \end{array} \qquad \begin{array}{c} & & \\ \hline \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \qquad \begin{array}{c} \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array}$$

5) Give the substitution organic product(s) for the following reactions. (10 pts)

(e)
$$\frac{CH_3CH_2OH}{4}$$

6) Give the organic product(s) for the following reactions. (16 pts)

$$\begin{array}{c} H \\ \hline \\ R \\ \hline \\ B \\ \end{array}$$

(b)
$$H_3C$$
 H_3C CH_3ONa CH_3ONa CH_3ONa CH_3ONa CH_3 CH_3ONa CH_3 CH_3ONa CH_3 CH_3ONa CH_3 CH_3ONa CH_3ONA

(c)
$$\frac{1}{CH_3CH_2ONa}$$
 O SN^2

(d)
$$\begin{array}{c}
H_{1} \downarrow \\
NH_{3}
\end{array}$$

$$\begin{array}{c}
NH_{3} \\
NH_{3}
\end{array}$$

$$\begin{array}{c}
+2 \\
+2 \\
+2 \\
+12
\end{array}$$

7) Mechanisms for twenty, please.

Give a reasonable mechanism for the following reaction. A mechanism, as we know, is the step by step description of a reaction. Use curved arrows, orbitals, etc., as needed.

Label whether the reaction is concerted, or ionic (multi-step).

For concerted reactions draw the transition state. (20 pts)

8) Devise a synthesis for the compound below from alkyl halide(s) using any other organic or inorganic reagents. (6 pts)

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9) Give the major organic products for the following reactions. (10 pts)

(a)
$$CI - \frac{0}{8}$$
 CH_3 OTS OT

(c)
$$POCl_3$$
 pyridine $+7$

$$\begin{array}{c|c} \text{(d)} \\ \hline \\ \text{HO } \text{H} \end{array} \begin{array}{c} \text{SOCl}_2 \\ \hline \\ \text{pyridine} \end{array}$$

10) Mechanisms for ten, please.

Give a reasonable mechanism for the following reaction. A mechanism, as we know, is the step by step description of a reaction. Use curved arrows, orbitals, etc., as needed. (10 pts)