I. Draw the structure of the major product of each of the following reactions. Make sure to show correct regiochemistry and cis/trans stereochemistry. If both cis and trans isomers are formed in equal amounts, show both. It is not necessary to draw both enantiomers of chiral products. (15 points)

- \[ \text{CH}_3 - \text{C} = \text{C} - \text{CH}_3 \quad \text{HCl} \quad \rightarrow \quad \text{cis} + \text{trans} \]
- \[ \text{CH}_3 - \text{C} = \text{C} - \text{CH}_3 \quad \text{H}^+ \quad \text{H}_2\text{O} \quad \rightarrow \quad \text{OH} \text{ (achiral)} \]
- \[ \text{CH}_3 - \text{C} = \text{C} - \text{CH}_3 \quad \text{Br}_2 \quad \text{H}_2\text{O} \quad \rightarrow \quad \text{OH} \text{ (plus enantiomer)} \]
- \[ \text{CH}_3 - \text{C} = \text{C} - \text{CH}_3 \quad \text{Li} \quad \text{NH}_3 \quad \rightarrow \quad \text{trans} \]
- \[ \text{CH}_3 - \text{C} = \text{C} - \text{CH}_3 \quad \text{H}_2 \quad \text{Pd/CaCO}_3 \quad \text{Lindlar's Catalyst} \quad \rightarrow \quad \text{cis} \]

II. Circle all of the stereoisomers that could form from the reactants shown in each of the following reactions. (5 points)

- \[ \text{H}_3\text{C} - \text{C} = \text{C} - \text{H} \quad \text{Br}_2 \quad \rightarrow \quad \text{cis} \quad \text{trans} \]
- \[ \text{CH}_3\text{CH}_2 - \text{C} = \text{CH}_2 \quad \text{H}_2 \quad \text{Pt} \quad \rightarrow \quad \text{cis} \quad \text{trans} \]

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Name: Key

Chemistry 343
Fall 2000
Quiz 9a