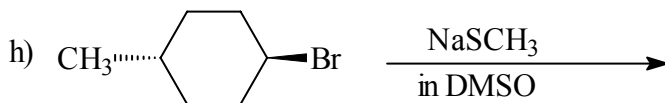
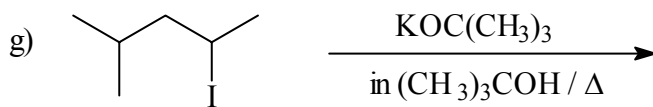
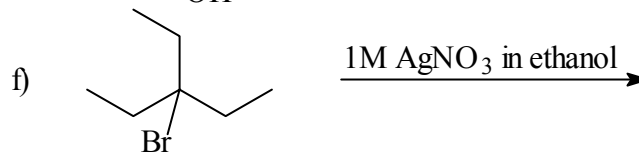
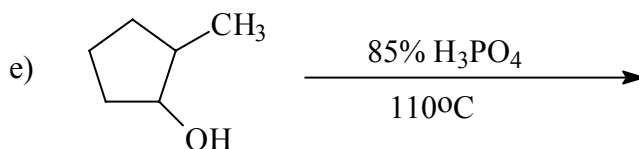
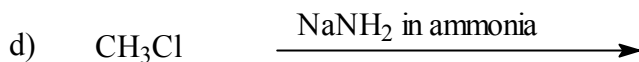
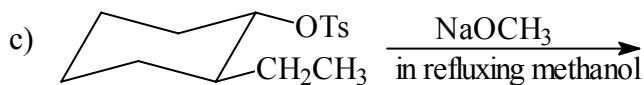
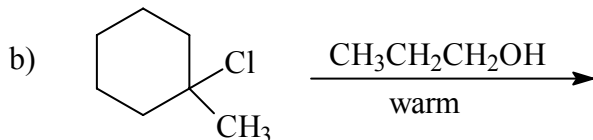
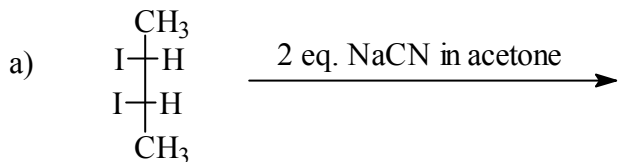


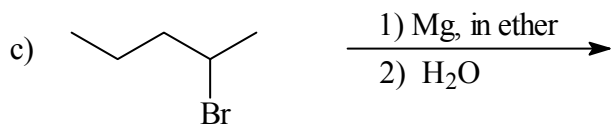
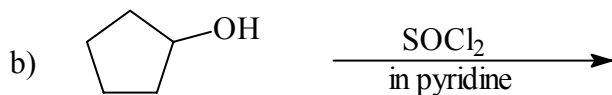
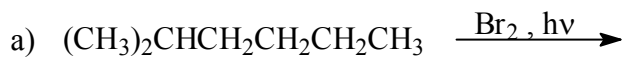
Problem Set for Chapters 10 and 11

1. Give the major product of the following reactions and predict the mechanism through which the reaction proceeds (e.g. S_N1).

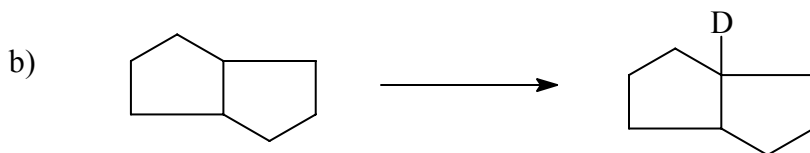
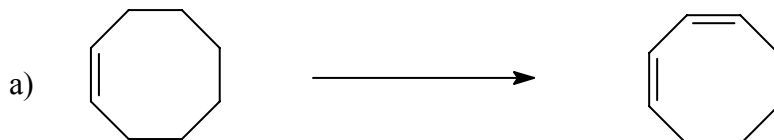


2. Consider the free radical monochlorination of **1,4-dimethylcyclohexane**. The reaction affords three different products (all C₈H₁₅Cl). In this reaction, the rates of hydrogen abstraction of **primary : secondary : tertiary** are **1 : 3.5 : 5**. Draw the three products and predict the percent composition (or ratio) of the product mixture. (Disregard *cis* / *trans* isomers for this problem.)

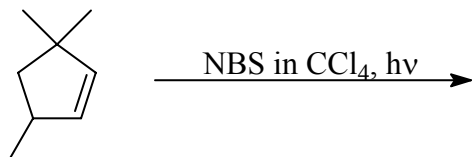
3. Give the major product of the following reactions.



4. Propose a series of chemical steps that would facilitate the following syntheses:



5. The reaction of 3,3,5-trimethylcyclopentene with N-bromosuccinimide (NBS) gives two products in a 75/25 ratio (both products are $\text{C}_8\text{H}_{13}\text{Br}$). **Draw the initially formed free radical intermediate** and any pertinent **resonance structure of this intermediate**. Also **draw the two products and circle the major one**.



6. The solvolysis reaction shown below gives rise to several products, two of which are shown. Propose a mechanism to account for the formation of these two products. Use arrows to indicate electron flow and show all intermediates.

