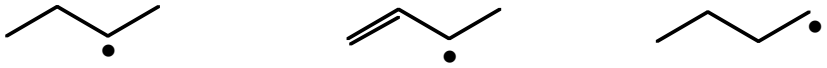
Chapter 4 Quiz, Chem 350

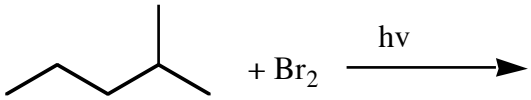
Due on Friday, Oct. 4

1. Write the mechanism (propagation steps only!) for the reaction of propane with bromine to give 2-bromopropane. Include detailed arrow-pushing.

2. Rank the stability of the following radicals, from 1 (most stable) to 3 (least stable).



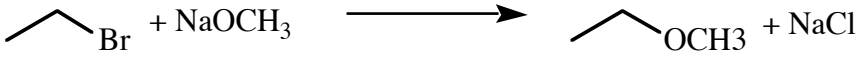
3. Draw the major product of the following reaction.



4. Which of the following statements correctly explains why bromination reactions are more selective than chlorination reactions.

a. bromine radical is less stable than chlorine radical, so it is more reactive and less choosy
b. bromine radical is more stable than chlorine radical, so it is more reactive and less choosy
c. bromine radical is more stable than chlorine radical, so it is less reactive and more choosy
d. bromine radical is less stable than chlorine radical, so it is less reactive and more choosy
e. relative radical stability is 3˚ radicals > 2˚ radicals > 1˚ radicals when bromine radicals snatch hydrogens from alkanes, but when chlorine radicals snatch hydrogens the resulting alkyl radical stability is 3˚ radicals < 2˚ radicals < 1˚ radicals

5. The following ionic substitution reaction has a rate constant $r=k[CH_3CH_2Br]^1[NaOCH_3]^1$.



What will happen to the overall rate if the concentration of bromoethane doubles?

If the concentration of $NaOCH_3$ doubles?

What will happen to the overall rate if you use the same amount of each reactant, but you double the amount of solvent that you use?