

Chem 233: Problem Set #10 (on Chapter 10)

1. Consider the monochlorination of dimethylpropane by chlorine and light. Write the following steps in the mechanism:

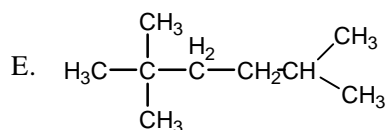
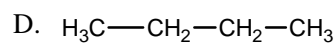
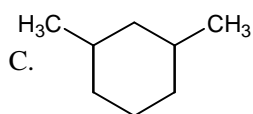
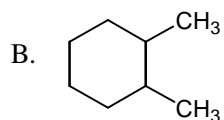
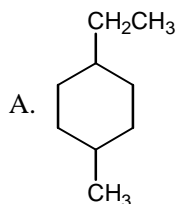
A. initiation step

B. propagation steps

C. termination steps

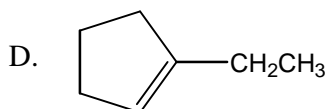
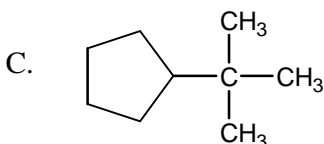
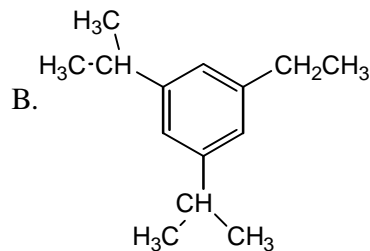
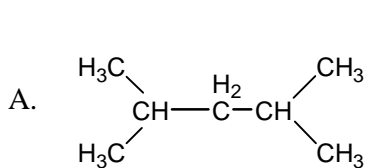
Which is the slow step in the reaction mechanism?

2. Give all possible monochlorination products for the alkanes given in A through E.



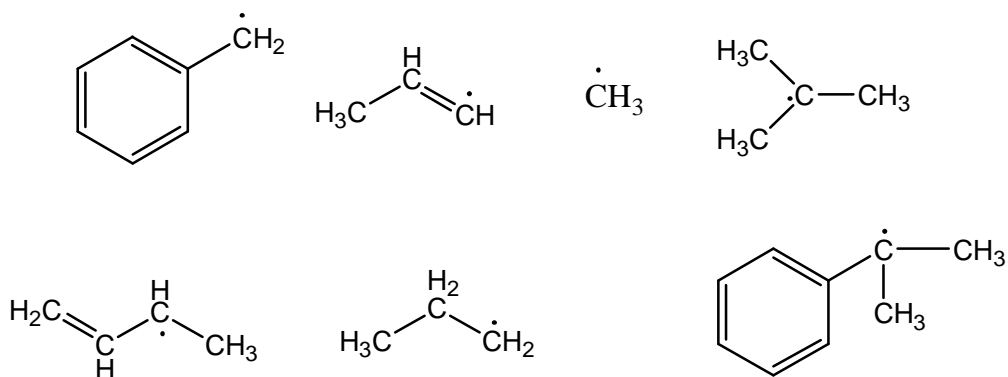
3. Explain why alkane chlorination is less selective than bromination.

4. Give the major monobromination product (using the reagents: $\text{Br}_2 + \text{light}$) for the compounds given in A through D. Give a short explanation for your choice of major product.



5. What complication occurs for the reaction given in Question 4D when too much Br_2 is present? How can this complication be avoided?

6. Place the following radicals in order of decreasing stability.



7. Give the major organic product(s) or reagent for each reaction shown below.

