# Radical Reactions: Peroxides & Halogenation

## STUDENT PRACTICE WORKSHEET

Name: _____ Date: _____

Instructions: Select the best answer for questions 1–8 and briefly justify your choice using substrate, reagents, or reaction conditions. For 9–10, explain your reasoning in complete sentences.

1. **Propene + HBr with ROOR favors:**

   A. 1-Bromopropane B. 2-Bromopropane C. Propanol D. 1,2-Dibromopropane

   Reasoning: _____

2. **Propene + HBr without peroxides favors:**

   A. 2-Bromopropane B. 1-Bromopropane C. Propanol D. Propane

   Reasoning: _____

3. **Which HX reliably exhibits the classic peroxide effect?**

   A. HBr B. HCl C. HI D. HF

   Reasoning: _____

4. **The step that consumes one radical and makes another is typically:**

   A. Propagation B. Termination C. A closed-shell initiation D. Tautomerization

   Reasoning: _____

5. **A radical chain can be terminated by:**

   A. Coupling of two radicals B. Hydrogen abstraction yielding a new radical C. Adding ROOR to initiate D. UV-induced bond cleavage

   Reasoning: _____

6. **Free-radical chlorination of butane can produce:**

   A. 1-Chlorobutane and 2-chlorobutane B. Only 1-chlorobutane C. Only 2-chlorobutane D. No chlorinated products

   Reasoning: _____

7. **Bromine addition to an alkene in inert solvent (no light) usually involves:**

   A. Bromonium ion B. Free radical HBr chain C. E1 D. A Grignard reagent

   Reasoning: _____

8. **Which may help initiate a radical reaction?**

   A. Peroxides or light B. PCC exclusively C. Dilute NaOH exclusively D. A carbonyl oxygen alone

   Reasoning: _____

9. **Compare HBr addition to propene with and without peroxides.**

10. **Why might radical monochlorination of butane form more than one structural product?**