Alcohol Reactions: Oxidation, Dehydration & Substitution

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. **PCC oxidation of 1-butanol usually gives which product?**

   A. Butanal B. Butanoic acid C. 2-Butanone D. 1-Butene

   Reasoning: _____

2. **Aqueous Jones oxidation of 1-butanol usually gives:**

   A. Butanal only B. Butanoic acid C. 2-Butanone D. Butane

   Reasoning: _____

3. **Oxidation of cyclohexanol gives:**

   A. Cyclohexanone B. Cyclohexanal C. Cyclohexane D. Benzoic acid

   Reasoning: _____

4. **Which alcohol resists ordinary Cr(VI) oxidation without C–C cleavage?**

   A. Ethanol B. 1-Propanol C. 2-Propanol D. 2-Methyl-2-propanol

   Reasoning: _____

5. **Acid-catalyzed dehydration of an alcohol generally forms:**

   A. An alkene B. An ester C. An amide D. An ether exclusively

   Reasoning: _____

6. **2-Propanol + PCC produces:**

   A. Acetaldehyde B. Propanone C. Propanoic acid D. Propane

   Reasoning: _____

7. **Primary alcohol oxidation to a carboxylic acid generally requires:**

   A. PCC in CH_2Cl_2 B. Aqueous strong oxidant C. $NaBH_4$ D. H_2/Lindlar

   Reasoning: _____

8. **An alcohol leaving group is often improved by:**

   A. Converting OH to a sulfonate ester B. Adding more water only C. Adding NaCl only D. Heating alone

   Reasoning: _____

9. **Compare the oxidation of 1-propanol under PCC and aqueous Jones conditions.**

10. **Why is 2-methyl-2-propanol resistant to ordinary oxidation?**