Oxidation & Reduction — Student Worksheet

Name: _____ Date: _____ Topic: Redox

Complete each transformation with reagents, a short explanation, and any important selectivity limitation. Show reasoning; there may be more than one defensible synthetic route.

1. Plan the conversion: CH3CH2CH2CH2OH → CH3CH2CH2CHO. Name the reagent(s), predicted product, and one selectivity issue.

2. Plan the conversion: CH3CH2CH2CH2OH → CH3CH2CH2CO2H. Name the reagent(s), predicted product, and one selectivity issue.

3. Plan the conversion: CH3–CH(OH)–CH3 → CH3–CO–CH3. Name the reagent(s), predicted product, and one selectivity issue.

4. Plan the conversion: Cyclohexanol → Cyclohexanone. Name the reagent(s), predicted product, and one selectivity issue.

5. Plan the conversion: CH3CH2CH2CHO → CH3CH2CH2CH2OH. Name the reagent(s), predicted product, and one selectivity issue.

6. Plan the conversion: CH3–CO–CH3 → CH3–CH(OH)–CH3. Name the reagent(s), predicted product, and one selectivity issue.

7. Distinguish the PCC and aqueous Cr(VI) outcomes from a primary alcohol.

8. Does NaBH4 add a carbon atom to an aldehyde? Explain.