INTOCHEMISTRY / ORGANIC CHEMISTRY

R/S Configuration & CIP Priorities

STUDENT WORKSHEET

Name: _____ Date: _____

Explain the reasoning behind every answer. Show stereochemical drawings when asked.

1. Fischer projection of 2-butanol: Fischer: CH3 top, CH2CH3 bottom, OH left, H right. Which substituent receives CIP priority 1?

2. What is the absolute configuration?

3. Mirror Fischer projection of 2-butanol: Fischer: CH3 top, CH2CH3 bottom, OH right, H left. Which carbon group outranks the other?

4. Which descriptor applies?

5. Priority-4 group pointing backward: An explicit tetrahedral diagram has priority 4 directed away; the 1→2→3 path is clockwise. Which priority must point away for direct clockwise assignment?

6. If group 4 points toward you, how do you handle the apparent assignment?

7. CIP ties and multiple bonds: Compare -CH2OH and -CH3 attached through carbon at a stereocenter. Which group has higher priority?

8. Does a molecular formula alone usually define R or S?