

R/S Configuration — Answer Key

Ten carefully checked problems • Organic Chemistry • Instructor copy

INSTRUCTOR ANSWER KEY — Correct answers and explanations appear in red.

1. For four groups OH, CH₂CH₃, CH₃, H, rank CIP priority.

Answer: OH > CH₂CH₃ > CH₃ > H.

2. With priority 4 away, 1→2→3 clockwise is which label?

Answer: R.

3. With priority 4 away, 1→2→3 counterclockwise is which label?

Answer: S.

4. What if priority 4 points toward the viewer?

Answer: Reverse the apparent assignment made from the 1→2→3 direction.

5. Which ranks higher: Cl or O?

Answer: Cl (atomic number 17) outranks O (atomic number 8).

6. Which ranks higher: CH₂Br or CH₂OH?

Answer: CH₂Br; comparison after first C gives Br versus O.

7. Which ranks higher: CH₂CH₃ or CH₃?

Answer: CH₂CH₃; (C,H,H) outranks (H,H,H).

8. Can a carbon with two identical methyl substituents be an R/S center?

Answer: No; four distinguishable groups are needed for a tetrahedral stereocenter.

9. Does R necessarily mean (+) optical rotation?

Answer: No; optical rotation sign is independent of the R/S descriptor.

10. What does the word enantiomer mean?

Answer: A pair of non-superimposable mirror-image stereoisomers.