

1. What is the most important factor that determines the shape of a molecule?

- A. The number of atoms in the molecule
- B. The types of atoms in the molecule
- C. The arrangement of the atoms in the molecule
- D. The size of the atoms in the molecule

2. Which of the following is NOT a type of isomer?

- A. Constitutional isomers
- B. Stereoisomers
- C. Geometric isomers
- D. Optical isomers

3. Which of the following is NOT a type of stereoisomer?

- A. Enantiomers
- B. Diastereomers
- C. Cis-trans isomers
- D. E/Z isomers

4. What is the name given to a molecule that has no plane of symmetry?

- A. Chiral
- B. Achiral
- C. Enantiomer
- D. Diastereomer

5. A molecule is said to be optically active if it _____.

- A. Has a plane of symmetry
- B. Cannot be superimposed on its mirror image
- C. Is chiral
- D. Is achiral

6. A molecule is said to be chiral if it _____.

- A. Has a plane of symmetry
- B. Cannot be superimposed on its mirror image
- C. Is optically active
- D. Is achiral

7. A molecule is said to be achiral if it _____.

- A. Has a plane of symmetry
- B. Cannot be superimposed on its mirror image
- C. Is optically active
- D. Is chiral

8. A molecule is said to be superimposable on its mirror image if it _____.

- A. Is chiral
- B. Is achiral
- C. Has a plane of symmetry
- D. Cannot be superimposed on its mirror image

9. A molecule is said to have a plane of symmetry if it _____.

- A. Is chiral
- B. Is achiral
- C. Can be superimposed on its mirror image
- D. Cannot be superimposed on its mirror image

10. Which of the following is NOT a type of symmetry element?

- A. Inversion
- B. Reflection
- C. Rotation
- D. Translation

11. Which of the following is NOT a type of point group?

- A. C_n
- B. D_n
- C. S_n
- D. P

12. How many unique stereoisomers can a molecule have if it has two chiral centers?

- A. 1
- B. 2
- C. 4
- D. 8

13. How many unique stereoisomers can a molecule have if it has three chiral centers?

- A. 1
- B. 2
- C. 6
- D. 8

14. How many unique stereoisomers can a molecule have if it has four chiral centers?

- A. 1
- B. 2
- C. 12
- D. 16

15. A molecule with two chiral centers can exist as _____.

- A. One stereoisomer
- B. Two stereoisomers
- C. Four stereoisomers
- D. Eight stereoisomers

16. A molecule with three chiral centers can exist as _____.

- A. One stereoisomer
- B. Two stereoisomers
- C. Six stereoisomers
- D. Eight stereoisomers

17. A molecule with four chiral centers can exist as _____.

- A. One stereoisomer
- B. Two stereoisomers

- C. Twelve stereoisomers
- D. Sixteen stereoisomers

18. The two enantiomers of a molecule are _____.

- A. Constitutional isomers
- B. Geometric isomers
- C. Optical isomers
- D. Stereoisomers

19. The two diastereomers of a molecule are _____.

- A. Constitutional isomers
- B. Geometric isomers
- C. Optical isomers
- D. Stereoisomers

20. The two cis-trans isomers of a molecule are _____.

- A. Constitutional isomers
- B. Geometric isomers
- C. Optical isomers
- D. Stereoisomers

21. The two E/Z isomers of a molecule are _____.

- A. Constitutional isomers
- B. Geometric isomers
- C. Optical isomers
- D. Stereoisomers

22. A molecule with two chiral centers can exist as _____.

- A. One stereoisomer
- B. Two stereoisomers
- C. Four stereoisomers
- D. Eight stereoisomers

23. A molecule with three chiral centers can exist as _____.

- A. One stereoisomer
- B. Two stereoisomers
- C. Six stereoisomers
- D. Eight stereoisomers

24. A molecule with four chiral centers can exist as _____.

- A. One stereoisomer
- B. Two stereoisomers
- C. Twelve stereoisomers
- D. Sixteen stereoisomers

25. The two enantiomers of a molecule are _____.

- A. Constitutional isomers
- B. Geometric isomers
- C. Optical isomers
- D. Stereoisomers

1. C
2. D
3. A
4. A
5. B
6. B
7. D
8. B
9. A
10. D
11. C
12. C
13. D
14. D
15. C
16. D
17. D
18. C
19. D
20. D
21. D
22. C
23. D
24. D
25. C