

General Chemistry: Bonding Practice

- When electrons are shared unequally, chemists characterize these types of bonds as _____.
[A] polar covalent [B] ionic [C] pure covalent
[D] unbalanced [E] none of these
- Chemical bonds formed by the attraction of oppositely charged ions are called
[A] coordinate bonds [B] magnetic bonds [C] ionic bonds
[D] covalent bonds [E] none of these
- Atoms with greatly differing electronegativity values are expected to form
[A] polar covalent bonds [B] triple bonds [C] ionic bonds
[D] no bonds [E] nonpolar covalent bonds
- Metals typically have _____ electronegativity values.
[A] low [B] negative [C] no [D] high [E] two of these
- Nonmetal elements typically have _____ electronegativities.
[A] low [B] high [C] strong [D] neutral [E] none of these
- In general, a larger atom has a smaller electronegativity. [A] True [B] False
- The electron pair in a C-F bond could be considered
[A] closer to C because carbon has a larger radius and thus exerts greater control over the shared electron pair
[B] closer to F because fluorine has a higher electronegativity than carbon
[C] closer to C because carbon has a lower electronegativity than fluorine
[D] centrally located directly between the C and F
[E] an inadequate model because the bond is ionic
- What is the correct order of the following bonds in terms of decreasing polarity?
[A] As-Cl, P-Cl, N-Cl [B] P-Cl, As-Cl, N-Cl [C] As-Cl, N-Cl, P-Cl
[D] P-Cl, N-Cl, As-Cl [E] N-Cl, P-Cl, As-Cl

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9. Which of the following bonds would be the most polar without being considered ionic?
[A] O--O [B] Si--O [C] C--O [D] N--O [E] Mg--O
10. Which of the following bonds would be the least polar yet still be considered polar covalent?
[A] C--O [B] N--O [C] Si--O [D] Mg--O [E] O--O
11. An N--F bond is expected to be more polar than an O--F bond.
[A] True [B] False
12. Carbon dioxide has _____ bonds.
[A] ionic [B] covalent [C] magnetic [D] polar covalent [E] none of these

Use the following choices to classify each of the following molecules.

- a. ionic
- b. covalent

13. N_2O _____

14. Al_2O_3 _____

15. Na_2S _____

16. BF_3 _____

17. H_2O_2 _____

18. KBr _____

19. SO_3 _____

20. Fe_2O_3 _____

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Use the following choices to classify each of the following molecules.

- a. ionic
- b. covalent

21. CrBr_3 _____

22. PCl_5 _____

Use the following choices to classify the bonds in each of the following molecules.

- a. nonpolar
- b. polar

23. S_8 _____

24. CF_4 _____

25. H_2S _____

26. I_2 _____

27. CO _____

28. Cl_2 _____

29. Which of the following compounds contains an ionic bond?

- [A] NaCl [B] $\text{HCl}(g)$ [C] CCl_4 [D] SO_2 [E] O_2

30. Which of the following compounds contains one or more covalent bonds?

- [A] Cs_2O [B] CO_2 [C] CaO [D] NaCl [E] BaBr_2

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31. Arrange the following elements in order of increasing electronegativity (from the smallest to the largest).
- [A] $C < F < Be < N$ [B] $N < C < Be < F$ [C] $Be < C < N < F$
[D] $C < N < F < Be$ [E] $F < N < C < Be$
32. Which element or ion listed below has the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^6$?
- [A] Ca^{2+} [B] Cl [C] Br^- [D] Se [E] two of these
33. Which element or ion listed below has the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^6$?
- [A] two of these [B] Ca^{2+} [C] Cl [D] Se [E] Br^-
34. Which element or ion listed below has the electron configuration $1s^2 2s^2 2p^6$?
- [A] Al^{3+} [B] Ne [C] F^- [D] Na^+ [E] all of these
35. The F^- and O^{2-} ions have the same electron configuration. [A] True [B] False
36. A phosphorus atom needs to gain _____ electrons to achieve a noble gas configuration.
- [A] 3 [B] 6 [C] 5 [D] 4 [E] 2
37. Which of the following ions has the same electron configuration as an argon atom?
- [A] P^{3+} [B] S^{3-} [C] Br^- [D] Ca^+ [E] K^+
38. $1s^2 s^2 p^6 s^2 p^6$ is the electron configuration for which one of the following ions?
- [A] F^- [B] Na^+ [C] S^- [D] Ca^{2+} [E] none of these
39. The electron configuration for Ca^{2+} is identical with
- [A] Kr [B] Ar [C] Ca [D] Ne
40. When they react chemically, the alkali metals (Group 1)
- [A] gain seven electrons [B] gain or lose seven electrons
[C] gain one electron [D] lose one electron

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[1] _____

[2] _____

[3] _____

[4] _____

[5] _____

[6] _____

[7] _____

[8] _____

[9] _____

[10] _____

[11] _____

[12] _____

[13] _____

[14] _____

[15] _____

[16] _____

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[17] _____

[18] _____

[19] _____

[20] _____

[21] _____

[22] _____

[23] _____

[24] _____

[25] _____

[26] _____

[27] _____

[28] _____

[29] _____

[30] _____

[31] _____

[32] _____

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[33] _____

[34] _____

[35] _____

[36] _____

[37] _____

[38] _____

[39] _____

[40] _____

[41] _____

[42] _____

[43] _____

[44] _____

[45] _____

[46] _____

[47] _____

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[1] [A]

[2] [C]

[3] [C]

[4] [A]

[5] [B]

[6] [B]

[7] [B]

[8] [A]

[9] [B]

[10] [B]

[11] [A]

[12] [D]

[13] b. covalent

[14] a. ionic

[15] a. ionic

[16] b. covalent

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[17] b. covalent

[18] a. ionic

[19] b. covalent

[20] a. ionic

[21] a. ionic

[22] b. covalent

[23] a. nonpolar

[24] a. nonpolar

[25] b. polar

[26] a. nonpolar

[27] b. polar

[28] a. nonpolar

[29] [A]

[30] [B]

[31] [C]

[32] [A]

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[33] [A]

[34] [E]

[35] [A]

[36] [A]

[37] [E]

[38] [D]

[39] [B]

[40] [D]

[41] [D]

[42] [D]

[43] [A]

[44] [D]

[45] [A]

[46] [D]

[47] [A]