

Pg. 220 – 223

- #1 a. 1
b. 5
c. 21
d. 92

- #3 a. $1s^2 2s^2 2p^1$
b. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^2$
c. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10}$
d. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$
e. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2$

#7 There are three different sublevels – s, p, and d in the third energy level. Together they account for 9 orbitals.

- #11 a. $1s^2 2s^2 2p^4$
b. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
c. $1s^2 2s^2 2p^6 3s^2 3p^6$
d. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$
e. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^6$

- #13 a. magnesium
b. aluminum
c. nickel
d. manganese

- #15 a. $1s^2 2s^2 2p^4$
b. $1s^2 2s^2 2p^6 3s^1$
c. $1s^2 2s^2 2p^6 3s^2 3p^5$
d. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^3$

- e. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^8$
- f. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^4$

21. a. sulfur
b. nickel

25. They each have an octet – eight valence electrons (a configuration ending in $s^2 p^6$)

27. Elements in the same period have the same highest occupied energy level

29. a. four
b. six
c. one
d. seven
e. three

31. Their configurations end with s^1

33. Letters b and d are both in group 14
Letters a and g are both in group 1

37. a. metal
b. metal
c. nonmetal
d. metalloid

44. a. 2nd energy level/1 valence
b. 3rd energy level/7 valence
c. 2nd energy level/4 valence

- d. 3rd energy level/6 valence
- e. 2nd energy level/2 valence

45. Letters a, d, and e each have 10 electrons

- 49.
- a. magnesium
 - b. phosphorus
 - c. argon