

(31) Na, Mg, Cl

(32) helium

(33) aluminum

(35) a. Ar: $1s^2 2s^2 2p^6 3s^2 3p^6$
 b. Si: $1s^2 2s^2 2p^6 3s^2 3p^2$
 c. Mg: $1s^2 2s^2 2p^6 3s^2$

(36) a. sodium c. germanium
 b. strontium d. selenium

(37) The 1st ionization energy is the energy needed to remove a 1st electron from an atom. The second ionization energy is the energy needed to remove a 2nd e⁻.

(39) a. Sr, Mg, Be
 b. Cs, Ba, Bi
 c. Na, Al, S

(42) a. Na
 b. S²⁻
 c. I⁻
 d. Al

(45) a. O
 b. F
 c. O
 d. S

(46) a - 1st ionization energy
 c - electronegativity