Periodic Trends – Revision questions

**1.** Which alkali metal belongs to the sixth period?

**2.** Which halogen belongs to the fourth period?

**3.** What element is in the fifth period and the eleventh group?

**4.** Why do all the members of a group have similar properties?

**5.** For each of the following pairs, circle the atom or ion having the larger radius.

a. S or O c. Na1+ or K1+ e. S2– or O2–

b. Ca or Ca2+ d. Na or K f. F or F1–

**6.** For each of the following pairs, identify the smaller ion.

a. K1+ or Ca2+ c. C4+ or C4– e. O2– or F1–

b. F1– or Cl1– d. S2– or F1– f. Fe2+ or Fe3+

**7.** In each of the following pairs, circle the species with the *higher* first ionization energy:

**(a)** Li or Cs **(b)** Cl- or Ar **(c)** Ca or Br **(d)** Na+ or Ne **(e)** B or Be

**8.** In each of the following pairs, circle the species with the *larger* atomic radius:

**(a)** Mg or Ba **(b)** S or S2- **(c)** Cu+2 or Cu **(d)** He or H- **(e)** Na or Cl

**9.** *Circle* the best choice in each list:

**(a)** highest *first* ionization energy: C, N, Si

**(b)** largest radius: S2–, Cl–, Cl

**(c)** highest electronegativity: As, Sn, S

**(d)** smallest atom: Na, Li, Be

**(e)** most paramagnetic: Fe, Co, Ni

**(f)** lowest *first* ionization energy: K, Na, Ca

**10.** Give two reasons for increasing atomic radius down a group on the periodic table.

**11.** Give two reasons for lower ionization energy going down a group on the periodic table.

**12.** Give two reasons for the increase in ionization energy going across a period from left to right.

**13.** Give two reasons for the decrease in atomic radius going across a period from left to right.

**14.** Explain why the second ionization energy for magnesium is lower than that for sodium.

**15.** Explain why the first ionization energy for boron is slightly less than that of magnesium.

**16.** Explain why the first ionization energy of oxygen is slightly less than that of nitrogen.

**17.** Describe the change in atomic radius when anions form.

**18.** Describe the change in atomic radius when cations form.

Reference: *unknown*
<https://www.chemical-minds.com>