SCH3U Bonding Quiz1 2016
Answer Section

MULTIPLE CHOICE

1. ANS: A
2. ANS: A
3. ANS: C
4. ANS: C
5. ANS: B

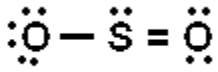
SHORT ANSWER

6. ANS:
   a. 3 (family # = 3)
   b. 3 (family # is over 4, so 8 subtract family number)

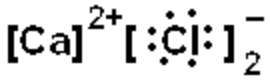
   PTS: 1
7. ANS:
   When two nonmetals react with each other, they try to form stable octets. To do this, they share electrons. If one atom is much more electronegative than the other, they will not share the electrons equally. The electrons will be more often found near the more electronegative atom. [extra Thus, one end of the bond is more negative than the other and the bond is polar.]

   PTS: 1 REF: C OBJ: 2.4 STA: MC2.03
8. ANS:
   Atoms are more stable when they have eight valence electrons. Nonmetals will try to gain electrons to form a stable octet and metals will try to give away electrons to form a stable octet. Thus, metals give electrons to nonmetals. Subsequently, the two oppositely charged ions are attracted to one another.

   PTS: 1 REF: K/U OBJ: 2.2 STA: MC1.03
9. ANS:
   Between the one sulfur atom and two oxygen atoms, there are 18 valence electrons. The only way for three atoms to attain stable octets is to arrange themselves as shown in the following diagram.

   PTS: 1 REF: K/U OBJ: 2.3 STA: MC2.04
10. ANS:
    Electronegativity difference of 2, therefore an ionic bond. (1 mark)
    Calcium forms an ion with a 2+ charge and chlorine forms an ion with a 1^- charge. This means that the smallest unit with a zero charge would require one calcium ion and two chloride ions.
    Show original ions (2 Cl and one Ca), and tranfer of electrons to Cl atoms. (3 marks) Final structure (a large two in front of the Cl ion is also acceptable): (1 mark)



PTS: 1 REF: K/U OBJ: 2.2 | 2.3 STA: MC2.04

11. ANS:
Textbook table values
H-C 2.5 - 2.1 = 0.4 nonpolar covalent
C-N 3.0 - 2.5 = 0.5 polar covalent

b. indicate N slightly negative, carbon slightly positive, vector towards N. Nothing on H (-0.5)

PTS: 1

12. ANS:
other factors or reasons (shapes, sizes, number of levels, sub-levels used, etc.)

PTS: 1