

CHEMISTRY

Choose two writing assignment topics, along with their question sets, from the following list for each week we are gone from school. Use the writing assignment template that we distributed in class. You can answer the questions in the empty area at the bottom of the template page. Pay close attention to the rubric that was distributed with your template packet.

1. TOPIC: Describe the contributions of Dmitri Mendeleev to the development of the periodic table

QUESTION SET 1: a) What is the periodic law?
b) Name 3 sets of elements added to the periodic table after Mendeleev's time.

2. TOPIC: Describe the contributions of Henry Moseley to the development of the periodic table.

QUESTION SET 2 a) Into what 4 blocks can the periodic table be divided to illustrate the relationship between the element's electron configurations and their placement on the periodic table?
b) In general, how do the periodic properties of d-block elements compare with those of the main-group elements?

3. TOPIC: How do the first ionization energies of main group elements vary across a period and down a group? Explain the basis for each trend.

QUESTION SET 3 a) What determines the length of each period of the periodic table?

b) Who established atomic numbers as the basis for organizing the periodic table?

4. TOPIC: Which elements are metalloids? Describe their characteristic properties.

QUESTION SET 4 a) How does the reactivity of Calcium compare to reactivity of Potassium?

b) Identify the block, period and group for argon, calcium, chlorine, and silicon.

5. TOPIC: What are main group elements? What trends can be observed across the various periods within the main-group elements?

QUESTION SET 5 a) Of the elements Mg, Cl, Na, and P, which has the

The largest and smallest atomic radius?

b) Among the elements Ga, Br and Ca, which has highest electronegativity?

6. TOPIC: Describe the octet rule in terms of noble-gas configuration and potential energy.

QUESTION SET 6 a) What type of bonding would be expected between H and F, Cu and S, an I and Br?

b) Draw a Lewis Structure for CH_3Br .

7. TOPIC: Distinguish between single, double, and triple covalent bonds by defining each and providing an illustration of each type.

QUESTION SET 7 a) Give two examples of an ionic compound.
b) What is the relationship between metallic bond strength and heat of vaporization?

8. TOPIC: How do the properties of metals differ from those of both ionic and molecular compounds? What specific property of metals accounts for their unusual electrical conductivity?

QUESTION SET 8 a) What two theories can be used to predict Molecular geometry?
b) What is the meaning of the term polar, as

applied

to chemical bonding?

9. TOPIC: Use the concept of hybridization to explain the bonding in methane, CH_4 .

QUESTION SET 9 a) Define bond energy.
b) Distinguish between ionic and covalent compounds.

10. TOPIC: Identify and define the three major types of chemical bonding.

QUESTION SET 10 a) Describe the electron sea model of metallic bonding.
b) Use the VSEPR theory to predict the molecular geometry of aluminum trichloride, AlCl_3 .