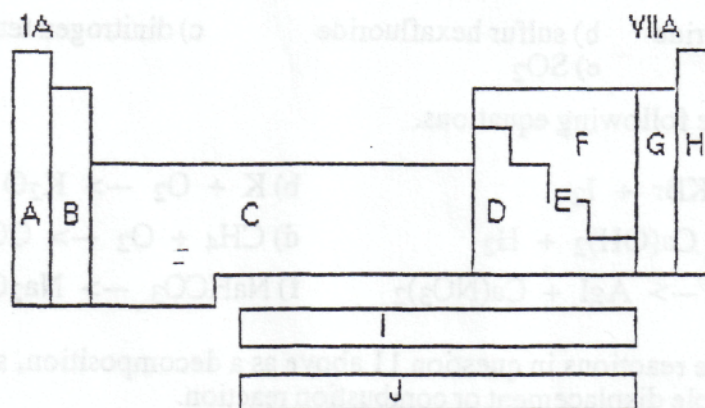


THINK CHEMISTRY!: A REVIEW

- Copy each of the following statements onto a piece of looseleaf. Replace the (?) with the word or phrase that correctly completes each sentence. Some of the words below might help you get started...

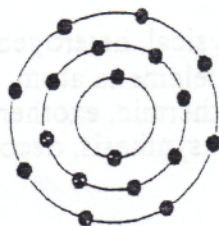
Helpful Words: electron, proton, neutron, chemical, physical, heterogeneous mixtures, quantitative, qualitative, ion, element, atom, compound, solutions, solute, solvent, metal, non-metal, covalent, ionic, endothermic, exothermic, rate, catalyst, single displacement, double displacement, combustion, synthesis, decomposition, product, reactant

- A (?) property is one that involves the production of a new substance.
 - The starting materials in chemical reactions are called (?).
 - The electron is a subatomic particle with a (?) charge.
 - An atom loses two electrons. It is now called an (?) and has a charge of (?).
 - Matter can be divided into two broad categories: pure substances and mixtures. Pure substances include (?) and (?). Mixtures include (?) and (?).
 - Ionic compounds are produced when there is a transfer of electrons from a (?) to a (?).
 - Molecular compounds are produced when two (?) share a pair of electrons in a (?) bond.
 - A reaction that absorbs heat is called (?).
 - The burning of a substance is called (?).
 - Consider Solution X with a pH of 3 and Solution Y with a pH of 5. The more acidic solution is solution (?). It is (?) times more acidic than the other solution.
- Print the Roman numerals **i to vi** in a column on your looseleaf and give the correct name for each of the sections of the periodic table described below.



- The elements indicated by the letter G.
- F, G and H together.
- The elements indicated by the letter A.
- The elements indicated by the letter H.
- A, B, C and D together.
- The elements indicated by the letter C.

3. Draw Bohr diagrams for the following elements: a) nitrogen b) chlorine
4. Examine the Bohr diagram below. This diagram COULD represent the electronic structure of a noble gas OR a stable ion. What would be the chemical symbol and ionic charge if the nucleus of the atom contained:



- a) 16 protons ?
- b) 18 protons ?
- c) 19 protons ?

5. Name the elements present, and the number of atoms of each element, in each of the following compounds.

- a) glucose, $C_6H_{12}O_6$ b) calcium phosphate, $Ca(PO_4)_2$

6. How many valence electrons belong to each of the following elements?

- a) H b) Be c) F d) Ne

7. Element Q is a metal with two valence electrons and element X is a non-metal with five valence electrons. They combine to form an ionic compound. What is its formula?

8. Write the correct formula for each of the following ionic compounds.

- a) lithium phosphate b) calcium carbonate c) silver iodide
d) aluminum bromide e) lead (II) oxide

9. Name the following compounds.

- a) NaBr b) MgI_2 c) $\text{Ca}(\text{NO}_3)_2$
d) FeCl_3 e) K_2SO_4 f) $\text{CoCl}_2 \cdot 2\text{H}_2\text{O}$

10. Write the corresponding name or formula for the following molecular compounds.

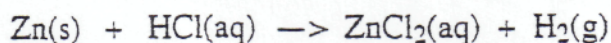
- a) phosphorus trichloride b) sulfur hexafluoride c) dinitrogen tetroxide
d) CBr_4 e) SO_2

11. Balance each of the following equations.

- a) $\text{Br}_2 + \text{KI} \rightarrow \text{KBr} + \text{I}_2$
 b) $\text{K} + \text{O}_2 \rightarrow \text{K}_2\text{O}$
 c) $\text{Ca} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + \text{H}_2$
 d) $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
 e) $\text{AgNO}_3 + \text{CaI}_2 \rightarrow \text{AgI} + \text{Ca(NO}_3)_2$
 f) $\text{NaHCO}_3 \rightarrow \text{Na}_2\text{CO}_3 + \text{CO}_2 + \text{H}_2\text{O}$

12. Identify each of the reactions in question 11 above as a decomposition, synthesis, single displacement, double displacement or combustion reaction.

13. Consider an experiment in which solid zinc metal reacts with hydrochloric acid solution...



- Balance the equation.
- What type of reaction is this? (Refer to the list of options given in question 12 above.)
- What would you expect to observe as this reaction occurred? (ie. What observation(s) would let you know a chemical reaction was occurring?)
- How could you know when the reaction was complete?
- How could you determine whether the acid had completely reacted?