

Science 10 – FINAL EXAM REVIEW

Unit 1 – Chemistry

1. Know how to read the Periodic Table of Elements

Where are the metals located on the periodic table? left of the staircase

Where are the non-metals located on the periodic table? right of the staircase

Rows are called: periods

Columns are called: families and groups

6
C
Carbon
12.011

2. On the following diagram: **atomic Number (# protons)**

What does the 6 represent: atomic Number (# protons)

What does 12.011 represent: **atomic mass (# p + #n)**

3. Complete this chart for the following elements

Element	Atomic Number	Neutrons	Protons	Electrons	Valance Electrons
Al	13	14	13	13	3
B	5	6	5	5	3
Ne	10	10	10	10	0
S	16	16	16	16	6

4. Define:

a. Ions: **elements that have lost or gained electrons and therefore have a charge.**

b. Cations: **ions that are positively charged (metals)**

c. Anions: **ions that are negatively charged (non-metals, polyatomics)**

d. Polyatomic ion: **ions that are made of a group of elements acting like a single element**

5. Determine the ionic charge that the following elements would have

Lithium <u>+1</u>	Beryllium <u>+2</u>
Sodium <u>+1</u>	Carbon <u>-4</u>
Nitrogen <u>-3</u>	Iodine <u>-1</u>
Fluorine <u>-1</u>	

6. How can you tell when you have an ionic compound? **lose/gain electrons: charged cation and anions**

7. How can you tell when you have a molecular compound? **two nonmetals (2 anions)**

8. How can you tell if you have an organic compound? **Hydrocarbons: H and C molecules**

9. How can you tell if you have an acid? **H+**

10. How can you tell if you have a base? **OH-**

11. Name the following ionic compounds:

- a) K_2S potassium sulfide
- b) Ag_2O silver oxide
- c) CH_4 methane (carbon tetrahydride)
- d) $AlBr_3$ aluminum bromide
- e) $HNO_{2(aq)}$ nitrous acid
- f) C_6H_{12} OMIT
- g) $HBr_{(aq)}$ hydrobromic acid
- h) $FeCl_3$ iron (III) chloride

- i) $CaCl_2$ calcium chloride
- j) CO_2 carbon dioxide
- k) $H_2CO_{3(aq)}$ carbonic acid
- l) NO_3 nitrogen trioxide
- m) $AuCl$ gold (I) chloride
- n) Na_3N sodium nitride
- o) $LiOH_{(aq)}$ lithium hydroxide
- p) Na_2CO_3 sodium carbonate

12. Write the formulas for the following compounds:

a) Sodium oxide	<u>Na₂O</u>
b) Hydrofluoric acid	<u>HF</u>
c) Pentene	<u>OMIT</u>
d) Copper (I) iodide	<u>CuI</u>
e) Calcium Nitride	<u>Ca₃N₂</u>
f) Lithium Fluoride	<u>LiF</u>
g) Sodium Phosphate	<u>Na₃PO₄</u>
h) Butane	<u>OMIT</u>

i) Nitrous Acid	<u>HNO₂</u>
j) Hydroarsenic acid	<u>H₃As</u>
k) Ethene	<u>OMIT</u>
l) Magnesium hydroxide	<u>Mg(OH)₂</u>
m) Dinitrogen tetroxide	<u>N₂O₄</u>
n) Phosphorus trichloride	<u>PCl₃</u>
o) Sulphide dioxide	<u>SO₂</u>
p) Carbon tetrafluoride	<u>CF₄</u>

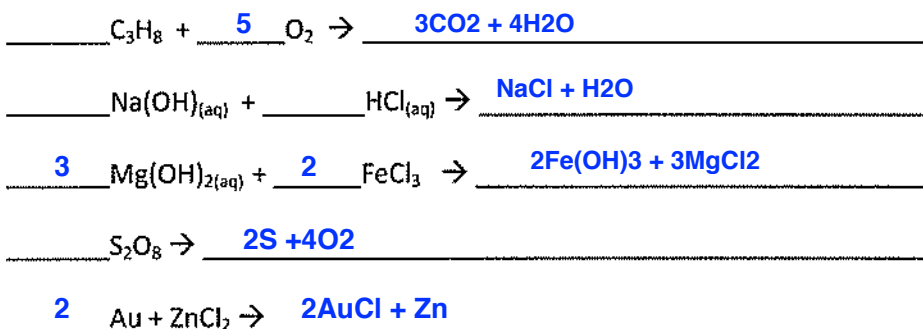
13. Balance the following chemical equations:

- a) Br₂ + H₂ → 2 HBr
- b) N₂ + 3 H₂ → 2 NH₃
- c) Fe₂O₃ + 3 H₂ → 2 Fe + 3 H₂O
- d) C₁₀H₁₆ + 8 Cl₂ → 10 C + 16 HCl

14. Know the 6 types of reactions. Give an equation to represent each type:

- a) Synthesis 2K + Br₂ → 2KBr
- b) Decomposition 2H₂O → 2H₂ + O₂
- c) Combustion C₁₀H₈ + 12O₂ → 10 CO₂ + 4 H₂O
- d) Neutralization HCl + NaOH → NaCl + H₂O
- e) Double Displacement MgF₂ + Li₂CO₃ → MgCO₃ + 2LiF
- f) Single Displacement LiCl + Br₂ → 2LiBr + Cl₂

15. Predict the products of the following reactions & Balance:



16. Name and explain the 4 ways you can make a chemical reaction go faster, using the collision theory.

1. Increase temperature
2. Increase concentration of the reactants
3. Increase the surface area
4. Add a catalyst

17. What are the properties of Acids? H⁺ ions, sour, corrosive, react with metals, turn litmus paper red, pH<7

18. What are the properties of Bases? OH⁻ ions, bitter, slippery, don't react with metals, turn litmus paper blue, pH>7