SNC2P Chemistry Unit REVIEW TOPICS

Lesson 1A Lab Equipment & Its Use (Equipment Name & Function)

Lesson 1B Lab Safety Rules

Lesson 1C Safety Symbols (HHPS & WHMIS)

Lesson 2A Classification of Matter (Atom, molecule, pure substance, mixture, element, compound, mechanical mixture, solution)

Lesson 2B Physical/Chemical Properties & Changes (Definitions, clues of chemical change)

Lesson 3A The Periodic Table (parts of an atom: nucleus, proton, electron, energy level, neutron; atomic number, atomic mass, mass number, element symbol, element name, locations of metals/non-metals/metalloid, chemical groups/families, periods, alkali metals, alkaline earth metals, halogens, noble gases)

Lesson 3B Bohr-Rutherford Diagrams for Atoms

Lesson 3C Electron Arrangements & Reactivity

Lesson 4 Atoms and Ions (Bohr-Rutherford diagrams for Ions)

Lesson 5 Forming Compounds (how ionic compound or molecular compound form)

Lesson 6A Ionic Compounds (writing chemical name & chemical formula)

Lesson 7 Polyatomic Ions and Compounds (writing chemical name & chemical formula)

Lesson 8 Molecular Compounds (writing chemical name & chemical formula)

Lesson 9A: How to Count Atoms

Lesson 9B Describing Chemical Reactions (reactants, products, word equations, skeleton equations)

Lesson 9C Law of Conservation of Mass & Balancing Equations (Law of conservation of mass, how to balance equations)

Lesson 10 Types of Chemical Reactions (synthesis, decomposition, single displacement, double displacement, combustion, acid-base)

Lesson 11A Acids & Bases (properties, pH indicators)

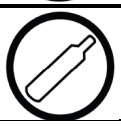
Lesson 11B The pH Scale

Lesson 11C Neutralization Reactions

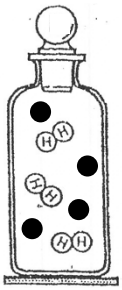
Chemistry Unit Review

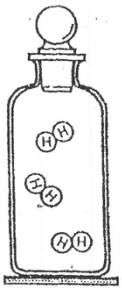
1) Match each **safety symbol** with its meaning (write the letter)

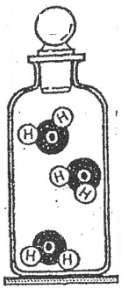
a) Biohazardous Infectious Material
b) Dangerously Reactive Material
c) Corrosive Material
d) Poisonous Material (Immediate and Serious Effects)
e) Oxidizing Material
f) Compressed Gas
g) Poisonous Materials (Long-Term Effects)
h) Flammable and Combustible Material

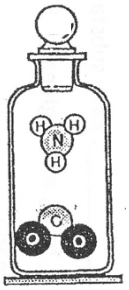
							
							

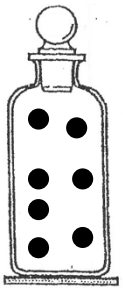
2) Indicate if each bottle contains an **element (E), a compound (C),** or a **mixture (M).**

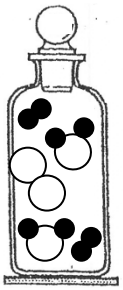

Bottle A _____


Bottle B _____


Bottle C _____


Bottle D _____


Bottle E _____


Bottle F _____

3) Refer **Question 2** and fill in the chart below.

Bottle	No. of atoms	No. of Molecules	Bottle	No. of atoms	No. of Molecules
A			**D**		
B			**E**		
C			**F**		

4) What are the **five clues** of a **chemical change**?

a) _____
b) _____
c) _____
d) _____
e) _____

5) Where are the **non-metals** and **metals** located in the periodic table?

Metals are located on _____ side of the periodic table, except _____

Non-metals are located on _____ side of the periodic table.

6) a) Name the **metalloids** in **period 2**. _____

b) Name the **metalloids** in **period 3**. _____

7) Complete the following chart for each group.

Group	Location in periodic table (group number)	Number of valence electrons	Examples (Name 2 Elements)
Alkali metals			
Alkaline earth metals			
Halogens			
Noble gases			

8) Use the periodic table to complete the chart below.

Symbol	**Element name**	**Atomic number**	**Mass Number**	**Mass Number**	**# of protons**	**# of neutrons**	**# of electrons**
	Calcium						
	Sulfur						
	Carbon						
	Fluorine						
	Sodium						
	Helium						
	Aluminum						
	Phosphorus						

9) When a metal _____ electrons, it forms a _____ ion.

10) When a non-metal _____ electrons, it forms a _____ ion

11) Draw a **Bohr-Rutherford diagram** for the **ATOM** of the following elements:

Mg	P	Ar

12) Draw a **Bohr-Rutherford diagram** for the **STABLE IONS** formed by each of the following atom:

Ca	F	K
Ionic charge: _____ Ionic symbol: _____	Ionic charge: _____ Ionic symbol: _____	Ionic charge: _____ Ionic symbol: _____

13) Use **Bohr-Rutherford diagrams** to show how the compounds formed.

calcium combines with fluorine Chemical formula: _____ Chemical name: _____
sulfur combines with sodium Chemical formula: _____ Chemical name: _____

14) Use the **crisscross** method, write the **chemical formula** for each **ionic compound**.

a) calcium nitride _____

b) sodium phosphide _____

15) Write the **chemical name** for the following **ionic compounds**.

a) $BeCl_2$ _____

b) Al_2S_3 _____

16) Use the **crisscross** method to write the **chemical formula** for each **polyatomic compound**.

a) aluminum nitrate _____

b) potassium sulfate _____

c) ammonium hydroxide _____

17) Write the **chemical name** for the following **polyatomic compounds**.

a) $Mg(OH)_2$ _____

b) $Be_3(PO_4)_2$ _____

18) Write the **chemical formula** for each **molecular compound**.

a) carbon monoxide _____

b) trinitrogen tetrafluoride _____

19) Write the **chemical name** for the following **molecular compounds**.

a) IF_5 _____

b) P_2O_3 _____

20) There are different types of compounds that are formed when atoms bond together. Complete the following chart to show the difference between these types.

Characteristics	Ionic Compound	Molecular Compound
Types of elements involved		
Types of bond (ionic or covalent)		
How do elements (metals or non-metals) form a compound? Lose or gain or share electrons?		

21) **Count** the atoms in each example.

$3(NH_4)_2SO_2$ N atoms: _____ H atoms: _____ S atoms: _____ O atoms: _____

$4Cu(NO_3)_2$ Cu atoms: _____ N atoms: _____ O atoms: _____

22) Examine the following word equation:

Propane + oxygen → carbon dioxide + water

a) List all **reactants** in this reaction. _____

b) List all the **products** in this reaction. _____

23) Write the word equation from each statement.

a) Calcium metal reacts with hydrobromic acid to form calcium bromide and hydrogen gas.
Word Equation:

b) Aluminum oxide is formed when aluminum metal reacts with oxygen gas.
Word Equation:

c) Sodium metal reacts with calcium oxide to produce sodium oxide and calcium metal.
Word Equation:

24) **Classify** the following **types of reactions** using the chart below.

Type of Reaction	**Pattern (General Equation)**
Synthesis	**A + B → AB**
Decomposition	**AB → A + B**
Single displacement	**AB + C → A + CB**
Double displacement	**AB + CD → AD + CB**
Combustion	**hydrocarbon + O_2 → CO_2 + H_2O**
Acid-Base	**Acid + Base → Salt + H_2O**

a) $Zn + 2HCl \rightarrow H_2 + ZnCl_2$ _____

b) $CaCO_3 + HCl \rightarrow H_2CO_3 + CaCl_2$ _____

c) $Br_2 + NaI \rightarrow I_2 + NaBr$ _____

d) $2\ H_2 + O_2 \rightarrow 2H_2\ O$ _____

e) $CO_2 \rightarrow C + O_2$ _____

f) $HCl + NaOH \rightarrow H_2O + NaCl$ _____

g) $C_6H_6 + 15\ O_2 \rightarrow 12\ CO_2 + 6\ H_2O$ _____

25) Balance the equations below by filling in the blanks. **If "1", write 1.**

a) _____ N_2 + _____ H_2 → _____ NH_3

Reactants	Products
N	N
H	H

b) _____ $KClO_3$ → _____ KCl + _____ O_2

Reactants	Products
K	K
Cl	Cl
O	O

c) _____ NaCl + _____ F_2 → _____ NaF + _____ Cl_2

Reactants	Products
Na	Na
Cl	Cl
F	F

d) _____ NaBr + _____ CaF_2 → _____ NaF + _____ $CaBr_2$

Reactants	Products
Na	Na
Br	Br
Ca	Ca
F	F

e) _____ Ag_2O → _____ Ag + _____ O_2

Reactants	Products
Ag	Ag
O	O

f) _____ P + _____ O_2 → _____P_2O_5

Reactants	Products
P	P
O	O

26) Classify each solution below as **acidic, basic,** or **neutral.**

a) Blue litmus stays blue and red litmus stays red _____

b) Has a pH of 10 and blue litmus stays blue _____

c) Taste bitter _____

27) **Properties** of Acids and Bases (**underline** the correct answer).

a) Acids taste **(sour / bitter).**

b) Bases taste **(sour / bitter).**

c) Acids have **(a slippery texture / gritty or stinging).**

d) Bases have **(a slippery texture / gritty or stinging).**

e) Acids react with **(blue / red)** litmus paper and turn it **(blue / yellow / red).**

f) Bases react with **(blue / red)** litmus paper and turn it **(blue / yellow / red).**

g) Acids dissolves in water to produce **(hydroxide / hydrogen / oxygen)** ions.

h) Bases dissolve in water to produce **(hydroxide / hydrogen / oxygen)** ions.

i) A base reacts with an acid to produce **(salt / acid)** and **(water / oxygen).**

28) Explain the **differences between acids and bases**.

Property	**Acids**	**Bases**
Ion that is present in solution		
React with metals (Yes / No)		
Conduct electricity (Yes / No)		
Taste		
Feel (Texture)		
pH indicators	**Acids**	**Bases**
Phenolphthalein		
Bromothymol blue		
Methyl orange		
Blue Litmus paper		
Red Litmus paper		
pH paper (pH range)		