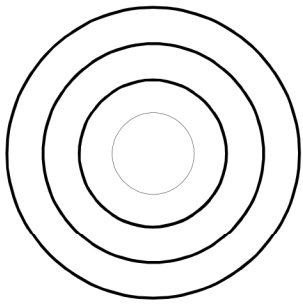
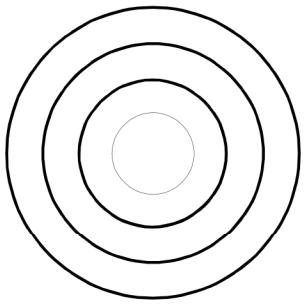
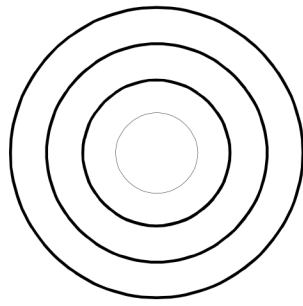
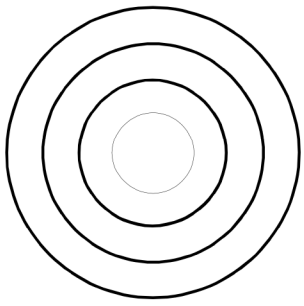


Name: _____

Chemistry Unit Test - SNC 2P

1. Complete each Bohr diagram. Include all details:

<p>S</p> 	<p>Al</p> 
<p>O²⁻</p> 	<p>Ar</p> 

2. Give a definition for the octet rule:

3. Write the ion that forms as a result of the octet rule for each of the following atoms (first one is done for you):

$_{11}\text{Na}$	Na^{1+}
$_{33}\text{As}$	
$_{20}\text{Ca}$	
$_{19}\text{K}$	
$_{17}\text{Cl}$	

$_{16}\text{S}$	
$_{13}\text{Al}$	
$_{53}\text{I}$	
$_{1}\text{H}$	
$_{15}\text{P}$	

$_{6}\text{C}$	
$_{49}\text{In}$	
$_{10}\text{Ne}$	
$_{14}\text{Si}$	
$_{8}\text{O}$	

4. Provide either names or formula for each of the following:

calcium chloride		KCl	
calcium oxide		K ₂ S	
sodium sulphide		Ca ₃ N ₂	
sodium oxide		NaCl	
magnesium nitride		KI	
calcium carbide		Sr ₃ P ₂	
aluminum iodide		SrI ₂	
gallium oxide		LiCl	

5. For each of the following descriptions, provide the evidence of a chemical change:

- a) two solutions are mixed together, there is the formation of a bright red compound that makes the mixed solution cloudy and no longer see through
- b) a spark is provided to ignite the gas of a Bunsen burner to produce a flame
- c) after shaking a can of pop, opening the can results in an abrupt overflow of fizz
- d) when the indicator bromothymol blue is placed in acid, it turns from blue to yellow, slowly adding base will turn the colour back to blue (will pass through a green phase on the way to blue)

6. What type of change is the melting an ice cube to form water? Explain the reason for your choice.

7. What type of change is creating carbon dioxide and water from the combustion of methane. Explain the reason for your choice.

8. For each of the following reactions, provide chemical coefficients to balance each equation and state the type of equation:

synthesis:	$A + B \rightarrow AB$
decomposition:	$AB \rightarrow A + B$
single replacement: (hint - find elements)	$A + BC \rightarrow AC + B$ $D + BC \rightarrow BD + C$
double replacement:	$AB + CD \rightarrow AD + CB$
combustion of a hydrocarbon:	$C_xH_y + O_2 \rightarrow CO_2 + H_2O$

BALANCE!!!	REACTION TYPE
$KClO_3 \rightarrow KCl + O_2$	
$P_4O_{10} + H_2O \rightarrow H_3PO_4$	
$C_3H_8 + O_2 \rightarrow CO_2 + H_2O$	
$Fe_2(SO_4)_3 + KOH \rightarrow K_2SO_4 + Fe(OH)_3$	
$Al + FeO \rightarrow Al_2O_3 + Fe$	
$Al + O_2 \rightarrow Al_2O_3$	
$Al_2(SO_4)_3 + Ca(OH)_2 \rightarrow Al(OH)_3 + CaSO_4$	
$Al + HCl \rightarrow AlCl_3 + H_2$	

9. Fill out this table to give a comparison between the properties of an acid and a base:

ACIDS	BASES

10. What are the common products of a neutralization reaction? Give an example using both a word equation and a chemical equation for hydrochloric acid (HCl) and sodium hydroxide (NaOH)

word equation:
chemical equation:

11. Please look at the following information regarding pH indicators:

INDICATOR NAME	pH COLOUR RANGE													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
methyl orange	red			orange										
litmus	pink						blue							
bromothymol blue	yellow						blue							
phenolphthalein	clear								pink					
alizarin yellow	yellow								pink					

Come up with a pH range for each substance based on the following information:

- a) vinegar - turn litmus to pink
- methyl orange to red
- b) washing soda - turns litmus to blue
- alizarin yellow to pink
- c) baking soda - turns bromothymol to blue
- phenolphthalein to clear
- d) calcium hydroxide - turns phenolphthalein to pink
- alizarin yellow to yellow

12. Draw a pH scale from 1 to 14. Label the portion that is acidic, basic and neutral. On this scale place the following items
- a) sulphuric acid (a very strong acid used in batteries)
 - b) sodium hydroxide (lye, a very strong base used to make soap pioneer days)
 - c) baking soda
 - d) lemon juice
 - e) good face soap
- You may wish to draw your scale vertically.

13. For each of the following gases, indicate if the gas is **combustible, supports combustion or extinguishes combustions**. Also indicate how you could test this gas with either a glowing splint or a flaming splint. One example is done for you:

GAS	COMBUSTION PROPERTIES	SPLINT TEST
Xenon (Xe)	extinguishes combustion	flaming splint goes out
Hydrogen (H ₂)	combustible	popping sound
Oxygen (O ₂)	supports combustion	splint burns brightly
Carbon Dioxide (CO ₂)	extinguishes combustion	splint goes out
Acetylene (C ₂ H ₂)	combustible	burning was observed