Chem 11 **Matter & Inorganic Naming Review Package** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hebden: Units III & IV \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**UNIT III: MATTER**

*In addition to these questions, make sure to look at the definitions and examples in your notes.*

1. A mixture (**is / is not**) composed of two or more substances.
2. **True or False**: An element can be broken down into a simpler substance.
3. From the following list, circle the ones that are elements:

silver
water
oxygen
air
carbon dioxide
hydrogen
gold
sulphur
alcohol
carbon
sugar
magnesium
chromium
nitrogen
salt
nickel

1. Draw the classification of matter diagram. Be sure to include the following: **matter, suspensions, compounds, mixtures, pure substances, elements, solutions,** and **mechanical mixtures**. Write a characteristic below each word. Give examples of the two kinds of pure substances and the three kinds of mixtures.
2. Classify the following as pure substances or mixtures.

air \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
mercury \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
gasoline \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
sugar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
oxygen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
gold \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
salt water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Classify the following as heterogenous or as homogeneous (assume they are all mixtures).

salt water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
aluminum foil \_\_\_\_\_\_\_\_\_\_\_\_\_\_
tap water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
tossed salad \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
unfiltered air\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
an apple \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
iron with rust \_\_\_\_\_\_\_\_\_\_\_\_\_\_
wood \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. a) Explain the principles behind how chromatography works.

 b) Calculate the Rf and identify the dye used from this data.

Table 1. Chromatography Data.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Colour** | **d1 (cm)** | **d2 (cm)** | **Rf** | **Identified Dye** |
| Unknown #1 | Blue | 6.7 | 8.6 |  |  |
| Unknown #2 | Red | 4.9 | 8.2 |  |  |

 Table 2. Known Dyes and Rf values.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Dye** | Red #2 | Red #3 | Red #4 | Yellow #5 | Yellow #6 | Blue #1 | Blue #2 |
| **Rf** | 0.81 | 0.41 | 0.62 | 0.95 | 0.77 | 1.0 | 0.79 |

1. Answer the questions below.
2. Classify the following properties of matter as physical or chemical.

Colour \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Density \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Burns easily (flammable) \_\_\_\_\_\_\_\_\_\_\_
Boils at 450°C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Melts at 145°C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dissolves in water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Classify the following as an intensive property (**I**) or an extensive property (**E**).

Mass \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Density \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Melting Point \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Colour \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Volume \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Length \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Fill in the table below by checking the appropriate column.
2. Draw a heating curve for both a pure substance and mixture below (on separate graphs). Be sure to include the following:
	1. x and y axis titles
	2. Label: solid, liquid and gas states
	3. Label: phase changes occurring (melting/freezing & evaporation/condensation points or ranges)
	4. Be sure that the difference between the curves of two graphs is obvious!

 **Heating Curve of a Pure Substance**

 **Heating Curve of a Mechanical Mixture**

**UNIT IV: INORGANIC NOMENCLATURE**

*In addition to these questions, there are a LOT more question in your textbook under Unit IV.*

1. Write the word that best characterizes each given species from the choices:

 ***atom anion cation molecule polyatomic ion***

a) S2– \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ b) C2H6 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) Y3+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ d) Tl \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e) CrO42– \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Name the following compounds.

 ***Write out ions with***

 ***their charges here***

 ↓

* 1. NaOH \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. NH4H2PO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. C3S5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. Fe(CH3COO)3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	5. Mn2O3•3H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	6. Cu2Cr2O7 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	7. H2SO3(aq) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	8. NiSO3•7H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	9. BaCO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	10. FeSO4•5H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	11. CH3COOH \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	12. I2O5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	13. HNO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	14. HClO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	15. Hg2C2O4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
1. Write the formula for each of the following compounds.
2. calcium nitride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. methane (*aka* carbon tetrahydride) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. molybdenum (V) sulfide trihydrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. nitric acid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. zinc hydrogen sulfite \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. iron (II) dihydrogen phosphate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. iron (III) sulfate nonahydrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. lead (II) iodide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. hydrocyanic acid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. lead (II) acetate decahydrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. xenon tetrafluoride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. ammonia (*aka* nitrogen trihydride) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
14. hypochlorous acid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
15. mercury (I) monohydrogen phosphate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
16. manganese (VIII) sulfide tetrahydrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_