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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_

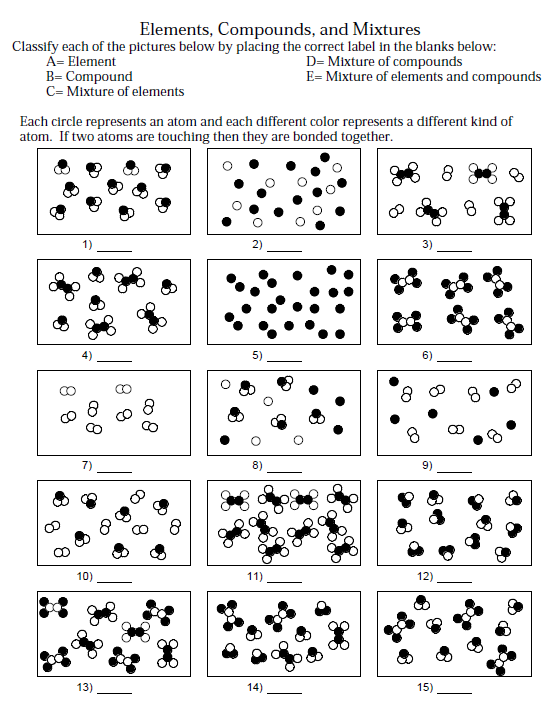
1. a) Explain the principles behind how chromatography works.

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.

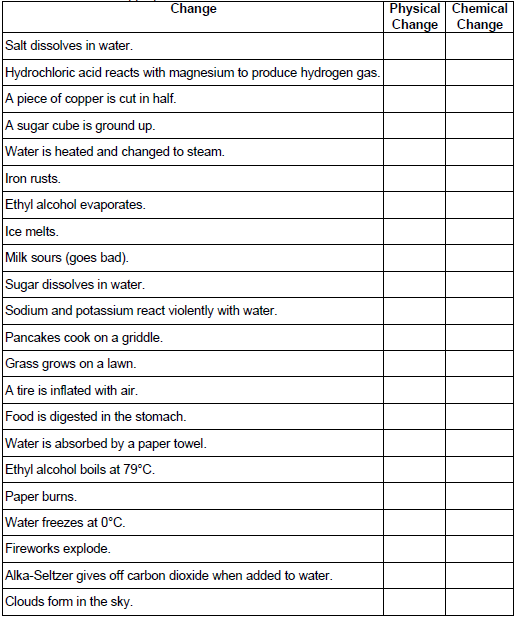
Colour \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Density \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Burns easily (flammable) \_\_\_\_\_\_\_\_\_\_\_  
Boils at 450°C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Melts at 145°C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_