

ALL work must be shown to receive full credit. **Due at the end of laboratory.**

ICE1.1. Provide brief definitions for each of the following terms;

a) atom	b) molecule
c) element	d) compound
e) formula	f) solution

ICE1.2. What is the name of each of the following elements?

- a) Ne                                      c) K                                      e) Sn  
b) Pb                                      d) Pt                                      f) F

ICE1.3. What is the symbol of each of the following elements?

- a) titanium                                      c) americium                                      e) neon  
b) magnesium                                      d) uranium                                      f) thallium

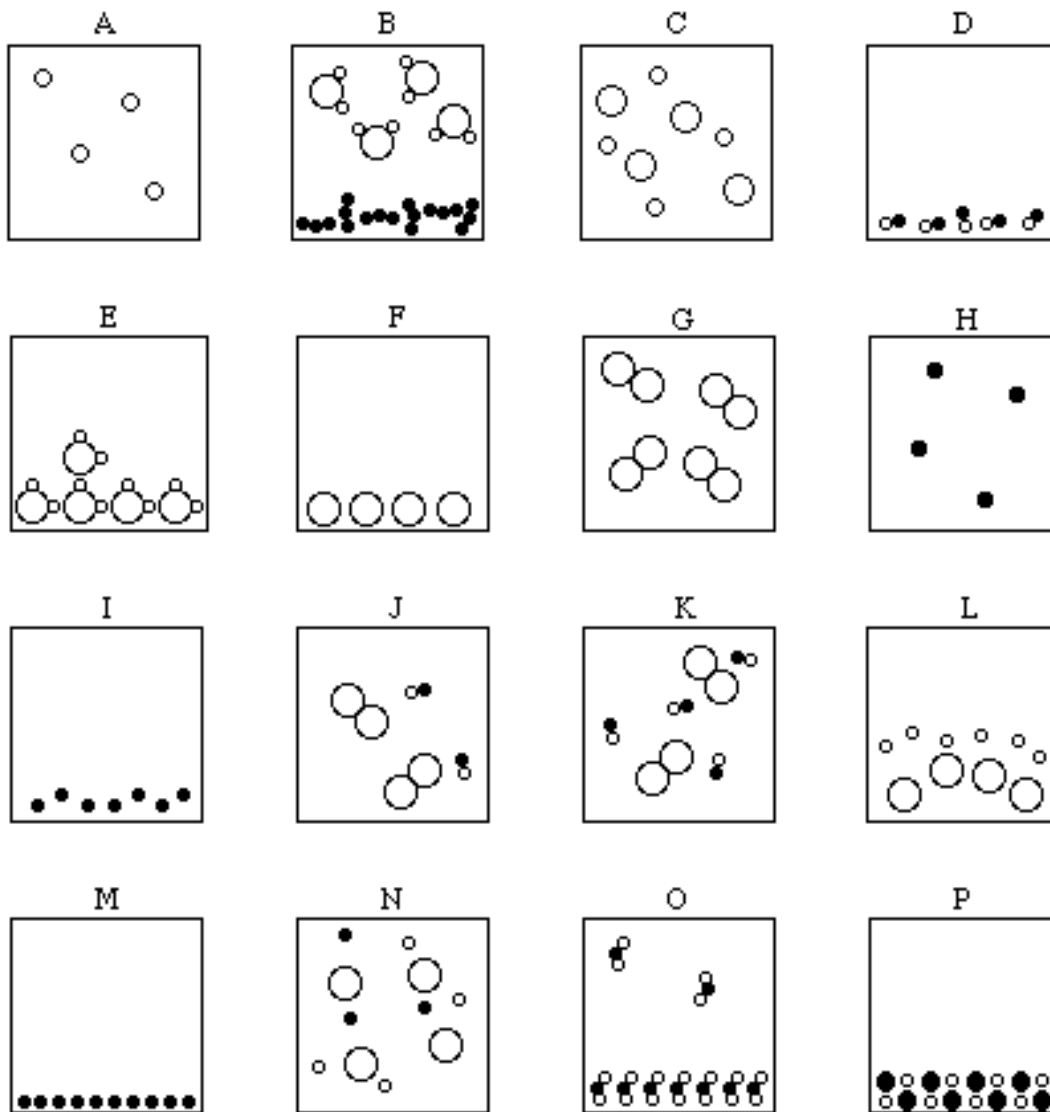
ICE1.4. Classify each of the following as chemical or physical change:

- a) water boiling                                      c) burning of leaves                                      e) adding salt to liquid water  
b) inhaling a small amount of helium                                      d) opening a soft drink can

ICE1.5. Each diagram (A - P) show a sample of substances as viewed at the atomic level.  
 Characterize the contents of the container in terms of each of the following categories:

- Category I. Homogeneous mixture, heterogeneous mixture or pure substance
- Category II. Element(s), compound(s) or both
- Category III. Solid, liquid, gas or combination of phases

As an example consider diagram A. Category I: pure substance; Category II: element; Category III: gas phase. It is a pure substance since there is a single type of matter in the container. It is an element since it exists as a monoatomic substance. Finally it is in the gas phase due to the totally random distribution of particles.



## ICE1.5. (Continued)

Diagram	Category I	Category II	Category III
A			
B			
C			
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			
O			
P			

PS1.6. Express each of the following as either a decimal number or in standard scientific notation. (Report the re-expressed number to the correct number of significant figures.)

a)  $8.900 \times 10^{-6}$

b) 222,000

c)  $6.023 \times 10^{23}$

d) 0.003670

e)  $9.32 \times 10^2$

e) 1.23

PS1.7. Indicate the number of significant figures in each of the following numbers;

a) 113.325 \_\_\_\_\_

b) 0.0066 \_\_\_\_\_

c) 2002 \_\_\_\_\_

d)  $4.10 \times 10^{-4}$  \_\_\_\_\_

e)  $7.00 \times 10^5$  \_\_\_\_\_

f) 500,500 \_\_\_\_\_

PS1.8. Round off each of the following numbers to the indicated number of significant digits;

a) 0.50505 (4 significant digits)

b) 123,000 (2 sig figs)

c) 0.03455 (2 sig figs)

d)  $2.0499 \times 10^5$  (2 sig figs)

PS1.9. Complete each calculation and report the answer to the correct number of significant figures.

a)  $4.5 - 4.05 - 0.050 =$

b)  $4.2337 \cdot 0.00706 =$

c)  $3.291 \times 10^5 + 8.445 \times 10^3$

d)  $10.105 - \frac{3.42}{(34.804 - 25.3)}$

PS1.10. Perform the following conversions;

- a) 100.0 yards to kilometers (use at least 3 conversions)
  
- b) 355 mLs ( $\text{cm}^3$ ) to quarts
  
- c) 295 pounds to kilograms
  
- d) 3.00 km to micrometers
  
- e) 4.56 nanometers to decimeters
  
- f)  $5.10 \times 10^3 \text{ ft}^3$  to  $\text{cm}^3$
  
- g) 1.1 gigawatts to watts