

Part I: MATCHING (2 pts. Each) Choose the BEST answer.

1. ____ Is able to stretch into a thin wire.
2. ____ How close your results are to an accepted value.
3. ____ Substance's atoms rearrange to form new substances.
4. ____ Relatively low density and exhibits rotational motion.
5. ____ A mixture that is uniform throughout.
6. ____ The color remained yellow for four seconds.
7. ____ Relatively low energy and definite shape
8. ____ Sulfur smells like rotten eggs.
9. ____ A pure substance that is made up of only one type of atom.
10. ____ Is able to be flattened into sheets.
11. ____ Water condensing on the side of a glass.

- A. MATTER
- B. LIVING SYSTEMS
- C. MALLEABILITY
- D. DUCTILITY
- E. ELEMENT
- F. COMPOUND
- G. HOMOGENEOUS SOLUTION
- H. HETEROGENEOUS SOLUTION
- I. ACCURACY
- J. PRECISION
- K. QUALITATIVE OBSERVATION
- L. QUANTITATIVE OBSERVATION
- M. SOLID
- N. LIQUID
- O. GAS
- P. PHYSICAL CHANGE
- Q. CHEMICAL CHANGE

MULTIPLE CHOICE – Circle the letter of the correct answer.

1. Which of these is an intensive physical property?
 - a. length
 - b. mass
 - c. malleability
 - d. flammability
 - e. corrosiveness
2. Which statement is **true** regarding MATTER.
 - a. Compounds can be separated into its separate atoms by physical methods.
 - b. Pure substances can be separated from mixtures by chemical methods.
 - c. Matter has mass and takes up space.
 - d. Matter does not exhibit inertia.
 - e. Matter is the basis of the study of biology.

3. Which is an example of a quantitative observation?

- a. A rotten egg odor was given off for ten minutes.
- b. Five drops of solution A are added per minute to solution B.
- c. The solution oscillated between yellow and blue for six seconds each.
- d. A white residue remained after heating the liquid massed at five grams.
- e. All of the above.

4. Which statement is **false** in regard to solids, liquids and gases?

- a. Solids have the least energy.
- b. Gases have the most types of atomic motion.
- c. Liquids have translational motion as well as vibrational motion.
- d. Gases have the shape of their container.
- e. All solids have a greater density than all liquids.

5. Which of the following is an example of a chemical change?

- a. Sublimation
- b. Heat emission
- c. Stretching copper into a wire
- d. Release of carbon dioxide from respiration
- e. Evaporation

6. Which statement is **false** regarding safety in the laboratory?

- a. Wash chemical spills of your skin for 5 mins.
- b. Always wear safety goggles
- c. Neutralize acid spills with sodium bicarbonate.
- d. No tasting in the lab!
- e. When lighting a Bunsen burner, turn on the gas first.

5. Match the following substances with the correct word that describes it.

- a. ____ Milk
- b. ____ Bronze
- c. ____ Table salt (NaCl)
- d. ____ Sucrose
- e. ____ Vinegar and oil
- f. ____ Helium gas (He)
- g. ____ Pure air
- h. ____ Kool aid
- i. ____ Vegetable salad

- A = Element
- B = Compound
- C = Homogeneous mixture
- D = Heterogeneous mixture

- j. ____ Magnesium
- k. ____ Salt water solution
- l. ____ Distilled water
- m. ____ Blood
- n. ____ Rust (Fe_2O_3)
- o. ____ Polluted water

7. The correct scientific units for length are _____, for volume is _____, for mass is _____ and temperature units are in _____ or _____.

CORRECTLY IDENTIFY THE FOLLOWING LABORATORY EQUIPMENT. Write your answer in the space provided.

A.



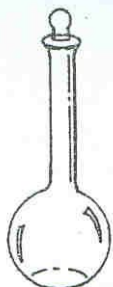
B.



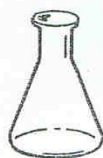
C.



D.



E.



F.



Read each question carefully! Put all of your answers on the answer sheet. Show all of your work on calculations.

SHORT ANSWER:

1. Complete the chart on the answer key.
2. a. USING **ONLY** THE PERIODIC **TREND** FOR ELECTRONEGATIVITY, what is the INCREASING order for the electronegativity of iron (Fe), cobalt (Co), chromium (Cr) and manganese (Mn)?
b. Now look up the ACTUAL electronegativity values on the back of the periodic table. What is the CORRECT increasing order for those elements in the above question (2a)?
3. What atom has the smallest radius of the alkali metals?
4. Give the symbol for the alkaline earth metal that is in the same period as the only metalloid in the boron group.
5. What is another name for the inert gases?
6. Which halogen has the highest electronegativity?
7. Name a liquid in period 4.
8. Which groups are the representative elements?
9. What is the inner transition element that is man-made (synthetic) and in the same period as cesium?
10. Put the following elements in order of **decreasing** atomic radius: copper (Cu), barium (Ba), neon (Ne) and carbon (C).
11. What is the only gas in the nitrogen family?
12. Name the transition element that has five (5) oxidation states and is in the same period as the halogen that is a liquid.
13. What element has a nuclear charge of 36?
14. Put these elements in order of **decreasing** ionization energy, silver (Ag), fluorine (F), Boron (B), rubidium (Rb) and zirconium (Zr).

Use the **diagram** of the periodic table provided to answer the following questions. **Only consider those elements that have a letter or number. More than one letter or number may be used for an answer. Put ALL possible answers.**

15. Which element (of the **letters** only) has the highest ionization energy?
16. Which elements are halogens?
17. Which element has the smallest mass?
18. Which elements are in the same family (two answers)?
19. Which element of those shown, has the largest atomic radius?
20. Which element has the highest electronegativity?
21. Which elements are non-metals?
22. Which elements are transition elements?
23. Which elements are ductile and malleable?
24. Which elements are in the same period?
25. Which elements do NOT conduct electricity?
26. Which element is an inert gas?
27. Which element represents an alkaline earth metal in the second period?
28. Which element is a member of the nitrogen family?
29. Which element would be most reactive in the alkaline earth metal family?
30. **Define** the word 'family' (2 parts).

MATCHING: Definitions (There may be more answers than you need!)

31. A substance made up of only 1 type of atom.
32. The strength of an atom to attract electrons in a covalent bond.
33. Atoms with the same number of protons but a different number of neutrons.
34. The number of positive charges in the nucleus.
35. The number that indicates the number of protons and electrons in a neutral atom.
36. A row on the periodic table.
37. The general name for a repeating pattern.
38. The number of protons plus neutrons in a specific isotope.
39. The sum of the abundance times mass number for a particular element.
40. The energy required to remove an electron from an atom.
41. A molecule made up of more than one type of atom.
42. One-half the distance between two neighboring nuclei.

- A. AVERAGE ATOMIC MASS
- B. DENSITY
- C. ELECTRONEGATIVITY
- D. PERIODIC TREND
- E. ISOTOPES
- F. ATOMIC RADIUS
- G. NUCLEAR CHARGE
- H. MASS NUMBER
- I. ATOMIC NUMBER
- J. AVERAGE ATOMIC NUMBER
- K. OXIDATION NUMBER
- L. PERIOD
- M. ELEMENT
- N. COMPOUND
- O. ELEMENTAL FORM
- P. . IONIZATION ENERGY

44. Calculate the average atomic mass of nickel.

<u>Isotope</u>	<u>% Abundance</u>
Molybdenum-92	14.84
Molybdenum-94	9.25
Molybdenum-95	15.92

<u>Isotope</u>	<u>% Abundance</u>
Molybdenum-96	16.68
Molybdenum-97	9.55
Molybdenum-98	33.76