

**The Nature and Structure of Matter****Objective 5****PRACTICE SET: Classifying Substances as Elements, Compounds, and Mixtures****PART A**

Complete each of the following sentences by filling in the missing word. Select from the following words: mixture, element, compound, chemical, or physical.

1. A substance composed of only one kind of atom is called an \_\_\_\_\_.
2. A \_\_\_\_\_ is composed of two or more different atoms, chemically combined.
3. Material that contains two or more different substances that are not chemically combined is a \_\_\_\_\_.
4. A mixture can be separated by \_\_\_\_\_ methods only, while a compound can be separated by \_\_\_\_\_ methods only. A substance which cannot be separated by ordinary chemical or physical methods is an \_\_\_\_\_.
5. Iron filings and sodium chloride (table salt) can be separated by hand, by density, or by using a magnet. Therefore, this is a \_\_\_\_\_.
6. Copper wire cannot be separated by ordinary chemical or physical means. Copper is an \_\_\_\_\_.
7. Water can be separated into hydrogen and oxygen gas by chemical means. Water is a \_\_\_\_\_.

**PART B**

Classify the following substances by placing E for element, C for compound, or M for mixture in the blank preceding each:

- a. \_\_\_\_\_ Water ( $H_2O$ )
- b. \_\_\_\_\_ Iron (Fe)
- c. \_\_\_\_\_ Sodium chloride (table salt)
- d. \_\_\_\_\_ Fool's gold
- e. \_\_\_\_\_ Salt water
- f. \_\_\_\_\_ Sulfur (S)
- g. \_\_\_\_\_ Sugar and sodium chloride
- h. \_\_\_\_\_ Gold (Au)
- i. \_\_\_\_\_ Iron filings and sand
- j. \_\_\_\_\_ Aspirin

### PART C

Suggest a method for separating each of the following mixtures:

- a. Salt and water
  
- b. Pieces of iron and granite
  
- c. Different size nails in a can
  
- d. Vinegar poured into vegetable oil

### PART D

Match the following elements with their chemical symbols by placing the letter of the correct choice in the blank on the left.

- |       |             |       |
|-------|-------------|-------|
| _____ | 1. Hydrogen | a. O  |
| _____ | 2. Sulfur   | b. Fe |
| _____ | 3. Helium   | c. H  |
| _____ | 4. Carbon   | d. S  |
| _____ | 5. Nitrogen | e. Au |
| _____ | 6. Gold     | f. C  |
| _____ | 7. Sodium   | g. He |
| _____ | 8. Copper   | h. N  |
| _____ | 9. Iron     | i. Cu |
| _____ | 10. Oxygen  | j. Na |