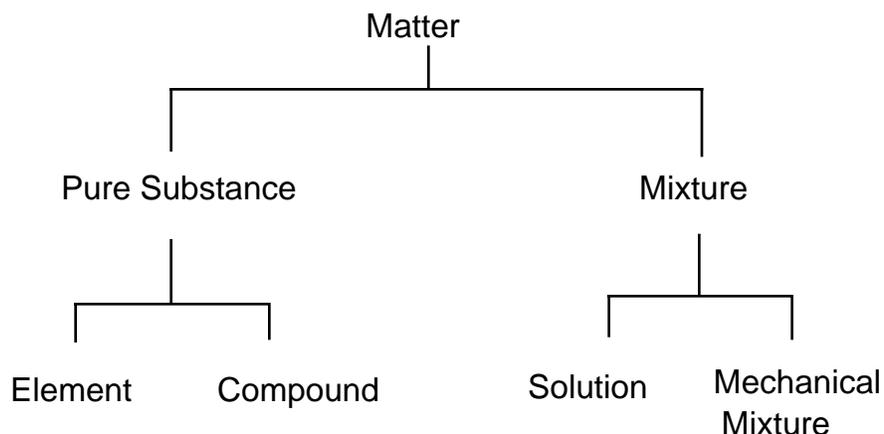


Chem11 Intro, Classification of Matter :

Notes/W.S.-40

Matter is classified according to the scheme below :



All matter is either a **pure substance** or a **mixture**. **Pure substances** are **elements** or **compounds**. They are **homogeneous** and have a fixed melting point. **Mixtures** consist of two or more pure substances.

Elements are composed of one type of atom. They cannot be broken down into simpler components.

Compounds are composed of two or more types of atoms in a fixed ratio.

Solutions are homogeneous (uniform) mixtures. They are composed of two or more elements and/or compounds and/or ions mixed together. The components cannot be distinguished by eye. Most solutions in chemistry are substances dissolved in water (you can see through aqueous solutions). But some solutions such as alloys (e.g. steel = Ni + Fe) are solid. Others, such as air, are gases.

Mechanical Mixtures are substances that don't fit into the above classes. They are **heterogeneous** (non-uniform). Examples are orange juice and soil.

Questions :

1) Define : element, compound, mixture, homogeneous, solution.

2) Give the names of five elements and where they can be found in your home.

3) Classify the following as E, C, S, or MM.

- | | | | |
|------------------|--------------|--------------------|-----------------|
| a) water | b) coffee | c) sugar | d) iron |
| e) coke | f) wood | g) quartz | h) brass |
| i) salt water | j) plastic | k) NaCO_3 | l) Co |
| m) CO_2 | n) air | o) Neon | p) glass |
| q) diamond | r) a crystal | s) rock | t) N_2 |

Answers: 2) Al (cans), Fe (iron frying pan), Cu (penny, copper pipe), Cr (Chrome coating on steel parts of furniture and plumbing fixtures), Hg (thermometer), Au (jewelry), Ag (silverware), Ni (five cent coin), Pb (lead fisherman's weight), Zn (coating on "tin" cans to prevent rust. The cans are really made of inexpensive steel), W (its the filament in a light bulb), C (coal, diamonds, charcoal, graphite in pencils), He (sometimes used in balloons), Ne (neon lights), O and N (in the air along with a little Ar) 3)a) C, b) MM, c) C, d) E, e) S, f) MM, g) C (its SiO_2), h) S, i) S, j) C, S, or MM, k) C, l) E, m) C, n) S, o) E, p) S, q) E, r) usually C but sometimes E, s) MM, t) E.