

Outline Notes Chapter 19

Section 1

- A. **Metals** conduct heat and electricity, reflect light –luster-, are **malleable** - _____, are ductile - _____, _____ bonding -combine with nonmetals by losing electrons, _____ bonding --positively charged metallic ions are surrounded by a cloud of electrons; _____ are in sliding layers and electrons are weakly held; readily form ionic bonds with nonmetals.
- B. **Alkali Metals** are softer and more reactive than other metals; highly reactive with _____ and _____; Combine readily with other elements due to _____ electron in outer energy level; they have multiple use:
- Human health _____
 - Photocells _____
 - Francium - _____
- C. The Alkaline Earth Metals- are _____ found naturally in elemental form: _____ electrons in outer energy level.
- Applications: _____
 - Human Body _____
- D. Transition Elements—often occur in _____ as _____
- Typically form _____ compounds - found in _____ and _____;
 - Iron triad – _____, _____, _____
 - _____ –most widely used of all metals and main ingredient in _____ abundant in Earth’s crust.
 - _____ and _____—used in some steel
 - _____ used to coat other metals.
 - Copper, silver, gold--_____ metals since once were commonly used in coins.
 - _____ -used in electrical wiring because it is a superior electricity conductor.
 - _____ used in photographic film and paper, jewelry
 - Zinc, cadmium, mercury – group _____ on the periodic table.
 - Zinc and _____ often used to coat or plate other metals

h. _____ only room temperature liquid metal; used in thermometers and batteries

E. **Inner Transition Metals**—seem _____ from the rest of the periodic table

- The Lanthanides**—Include _____, cerium, praseodymium, samarium, europium, gadolinium, and terbium
- The _____** --all are radioactive and _____ is the best known.

Section 2 Nonmetals

- A. Properties of nonmetals—usually gases or _____ solids at room temperature; are _____ malleable or _____; usually poor _____ of heat and electricity; usually _____ lustrous.
- Ionic compounds—form when nonmetals gain _____ from metals and become _____ ions.
 - Covalent compound—form when nonmetals share _____ with other _____.
- B. _____ -- most common element in the universe.
- A _____ - two atoms of the same element in covalent bond
 - _____ element found most on Earth as part of _____.
- C. _____ - include bromine, iodine, _____, _____, and astatine
- A _____ forms when a halogen gains one electron from metal.
 - Use of halogens
 - _____ - disinfectant and bleach
 - _____ dyes in cosmetics
 - _____ hormone regulation
 - _____ - a solid changes directly into a gas with first becoming a liquid.
- D. The Noble Gases—exist as _____, _____ atom
- _____ - used in blimps and balloons
 - _____, argon, and krypton – used in lights.

Section 3 Mixed Groups

- A. Properties of _____ -- form ionic and covalent bonds have some metallic and some nonmetallic properties; partial conductivity gives them _____ characteristics.
- B. The _____ Group—named for the first element in Group 1

- a. _____ used in water softening products, antiseptics and fuels.
- b. _____ - abundant in Earth's crust; used in cans, foil wraps, pans, building materials, and aircraft.
- C. The _____ Group— _____ electrons in outer energy level
- a. _____ - found in coal, oil, natural gas, and foods
- b. Silicon occurs as an _____ -- same element with different molecular structures
1. _____ found in sand, rocks and soil.
 2. The main component in _____, which conduct electricity under certain conditions
- c. _____ -- also used in semiconductors
- d. _____ -used to coat other metals.
- e. Diamonds, graphite and buckminsterfullerene are all _____ of carbon.
- D. The _____ Group— _____ electrons in outer energy level; tend to form covalent bonds.
- a. _____ used to make nitrates and ammonia
- b. _____ - used in water softeners, fertilizers, match heads, fine china.
- c. _____ and _____ used with other metals to lower their melting points.
- E. The _____ Group or Group 16.
- a. _____ - makes up _____ % of air, is used by living things in respiration and provides protection from the sun's radiation.
- b. _____ - used to form sulfides for pigment in paint.
- c. _____ - used in photocopiers and multivitamins
- d. _____ and _____ are also oxygen group elements.
- F. _____ Elements—scientists create elements not usually found on Earth; synthetic elements usually disintegrate quickly.
- a. Uranium can be made into _____ which forms plutonium when it disintegrates.
- b. _____ elements have more than _____ protons and are synthetic and unstable.
- c. The study of synthesized elements help scientists to understand the forces holding the _____ together.
- d. Element 114 lasted for _____ seconds.
1. It combined 114 protons with _____ neutrons.
 2. It broke apart due to enormous _____ between protons.

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