Physical Science Chapter 6 Study Guide

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Every element consists of tiny particles called \_\_\_\_\_\_\_\_\_\_\_\_
  + All atoms of a particular element have the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Different elements have different properties because their atoms are different
  + Atoms of different elements can combine in specific ways to form \_\_\_\_\_\_\_\_\_\_\_\_
  + Chemical processes are the result of the rearrangement, combination, or separation of atoms
* Abbreviation given to each element –\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—Know the bold print chemical symbols
* Parts of an atom
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—dense central core composed of protons and neutrons
  + \_\_\_\_\_\_\_\_\_\_\_\_\_ surround the nucleus
  + Protons and neutrons are made up of small particles called \_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Protons have \_\_\_\_\_\_\_\_\_\_\_\_ charge and electrons have a \_\_\_\_\_\_\_\_\_\_\_\_\_ charge
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—atoms that are of the same element but have different number of neutrons
* Electron shells—regions around the nucleus that represent the \_\_\_\_\_\_ level of electrons
* \_\_\_\_\_\_\_\_—atoms with a charge
  + Cation—atom with \_\_\_\_\_\_\_\_\_\_\_\_\_ charge
  + Anion—atom with \_\_\_\_\_\_\_\_\_\_\_\_\_ charge
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—total number of protons and neutrons in an atom (measured in atomic mass units (u); an atom with 10 protons and 9 neutrons would have an atomic mass of 19 u.)
* Quantum theory—energy is not released in a smooth flow but rather in distinct little “packets” called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Heisenberg uncertainty principle—it is impossible to measure the \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an electron at the same time
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—the regions where an electron generally moves
* Quantum numbers—numbers with represent the overall motion of an electron
* Pauli exclusion principle—no two electrons can have the same four quantum numbers
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—an atom’s nucleus that undergoes change give this off
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ decay—the process of one kind of atom changing into another kind of atom
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—the decay rate of a radioactive substance
* Types of radioactive decay
  + \_\_\_\_\_\_\_\_\_\_\_ decay—a nucleus emits a clump of two protons and two neutrons
  + \_\_\_\_\_\_\_\_\_\_ decay—a nucleus changes a neutron into a proton and ejects an electron
  + \_\_\_\_\_\_\_\_\_\_\_\_\_ decay—a nucleus emits high-energy electromagnetic rays
* Nuclear \_\_\_\_\_\_\_\_\_\_\_\_\_—the process of an atom’s nucleus splitting apart, releasing Great amounts of energy
* \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_—the domino effect of one nucleus splitting and setting off another, that on setting off another, etc.
* Nuclear \_\_\_\_\_\_\_\_\_\_\_\_\_\_—a type of controlled reaction used to harness useful energy
* Nuclear \_\_\_\_\_\_\_\_\_\_\_\_\_—the process of combining two nuclei to form a heavier nucleus and thereby releasing energy
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shell—the outer shell of an atom; the number of electrons in this shell largely determines the properties of an atom
* Octet rule—most atoms want \_\_\_\_\_\_ electrons in their valence shells
* The periodic table
  + The rows are called \_\_\_\_\_\_\_\_\_\_\_\_\_
  + The columns are called \_\_\_\_\_\_\_\_\_\_\_\_
  + The elements are divided into three main groups: metals, semimetals, nonmetals
  + The first column or group is called the alkali metals and is very reactive
  + Mercury is the only metal that is liquid at room temperature
  + Oxygen makes of a majority of the mass of the human body