Unit 3 Review - Atomic Structure & Periodic Table

Part 1: Answer the following questions.

- 1. a. Which scientist created the first modern atomic theory? John Dalton
 - b. What was his theory?
 - All matter is made of extremely small particles called atoms
 - All atoms of a given element are identical and atoms of a specific element are different from any other element
 - Atoms cannot be created, divided into smaller particles or destroyed
 - Different atoms combine in simple whole number rations to form compounds
 - In a chemical reaction, atoms are separated, combined or rearranged.
 - c. What was his model of the atom called? Billiard Ball
 - d. What was proven wrong and why?
 - All atoms of a given element are identical wrong b/c of the existence of isotopes
 - Atoms cannot be divided into smaller particles wrong b/c of the existence of electrons, protons and neutrons
- 2. a. Which scientist did the gold foil experiment? Rutherford
 - b. What did be conclude from the gold foil experiment?
 - LAtoms are made up of mostly empty space
 - 2. Atoms have a small positive center call the nucleus
- a. Who discovered the electron? J. J. Thomson.
 - b. What was the name of his experiment? Cathode Ray Tube Experiment.
 - c. What was his model of the atom called? Plum Pudding Model
- 4. What did Mendeleev do?

Arranged the periodic table in order of increasing atomic mass

- a. Who arranged the modern periodic table? Moseley
 - b. How is the modern periodic table arranged? Arranged in order of Atomic Number
- a. What are the three subatomic particles? Give the symbols, charge, mass and location of each.

Particles	Symbol	Charge	Mass	Location
Proton.	p"	Positive	1 arms	Nucleus
Neutron	13"	Neutral	1 arms	Nucleus
Electron	e'	Negative	1/2000 arms	Electon Cloud

7. What is special about the proton? The proton IDENTIFIES THE ELEMENT

- 8. Fill in the blanks in the following:
 - a. Mass # p' + m'
 - b. Atomic # = # of protons

9. What is the difference between Average Atomic mass and mass #? (Average) Atomic Mass is found on the periodic table and is the weighted average of the isotopes. The Mass Number is the mass of one element and must be given or calculated by adding the protons and neutron of that element.

- 10. Which of the following are isotopes of the same element? How do you know?

- b. 15 X
- c. 12 X d. 15 X

A. and D. They have the same Atomic Number (# of Protons) 7

11. Calculate the average atomic mass for Boron if it has two naturally occurring isotopes; boron -10 (abundance of 19.8%) and boron - 11 (abundance of 80.2%).

$$(10 \times \frac{19.8}{100}) + (11 \times \frac{80.2}{100}) = 10.802$$
 amu

Identify an element "X" by calculating the average atomic mass. X - 6 (abundance of 7.5%) and X-7 (abundance 92.5%).

$$(6 \times \frac{7.5}{100}) + (7 \times \frac{92.5}{100}) = 6.925$$
 amu Which is Lithium

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