

CHEM 120 Homework Chapter 2

1) Which of the following name/discovery/experiment combination is not correct

- a) Rutherford/ nucleus of an atom/ α -particle scattering experiment from a gold foil.
- b) Thomson/discovery of electron/ Cathode Ray Tubes(CRT).
- c) Chadwick/discovery of neutrons/ bombardment of ${}^9\text{Be}$ with α -particles (${}^9\text{Be} + {}^4\text{He} \rightarrow {}^{12}\text{C} + {}^1_0\text{n}$).
- d) Robert Andrew Millikan/protons, positively charged particles/Oil drop experiment.

2) Most of the volume of an atom is occupied by the space required for the,

- a) moving electrons b) protons c) nucleus d) neutrons

3) All isotopes of a given element,

- a) possess different masses. b) possess the same chemical properties.
- c) have the same atomic number) d) all the above.

4) The ${}^{207}\text{Pb}^{2+}$ ion contains

- a) 82 protons, 126 neutrons, and 80 electrons. b) 82 protons, 125 neutrons, and 80 electrons
- c) 82 protons, 126 neutrons, and 126 electrons. d) 126 protons, 82 neutrons, and 122 electrons.

5) An atom with 35 protons and 45 neutrons would be an isotope of the element,

- a). rhodium, Rh b) neon, Ne c) mercury, Hg d) bromine, Br

6) How many microliters are in 89.63 L?

- a) $8.963 \times 10^{-4} \mu\text{L}$ b) $8.963 \times 10^{-7} \mu\text{L}$
- c) $8.963 \times 10^4 \mu\text{L}$ d) $8.963 \times 10^7 \mu\text{L}$
- e) $8.963 \times 10^{10} \mu\text{L}$

7) A box has dimensions of 1.51 in. by 2.74 in. by 4.72 in. What is its volume in cubic centimeters?

- a) 1.19 cm^3 b) 0.841 cm^3
- c) 7.69 cm^3 d) $320. \text{ cm}^3$
- e) 49.6 cm^3

8) If the isotopic ratio of the two boron isotopes ${}^{10}\text{B}$ (10.013 amu) and ${}^{11}\text{B}$ (11.009 amu) has been altered from the ratio found in nature and now contains 48.73% ${}^{10}\text{B}$, determine the atomic weight of the sample of boron.

- a) 10.811 amu b) 10.013 amu
- c) 11.009 amu d) 10.524 amu
- e) 10.498 amu

19) . In Bohr's theory of the atom, what is the number n ($n = 1, 2, 3, 4$) called?

- a) Quantum number b) Atomic number c) Mass number d) orbital

20) Explain the meaning/consequences of Heisenberg's Uncertainty Principle.

- a) Electron have wave properties
- b) It is impossible to know the exact position and momentum of a particle, such as an electron in an atom.
- c) Electron absorb energy and get excited to a higher energy level.
- d) Certain nuclei decay and change to other types of elements