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Chemistry_Questions_0019

True/False (2 points each)

- 1) A physical change occurs when the chemical identity of a substance is destroyed and a new substance forms.
- 2) Electrons and protons have similar mass.
- 3) Atoms are mostly space.
- 4) Isotopes of an element have the same number of neutrons.
- 5) In a fission reaction, a large nucleus with few protons splits into smaller nuclei.
- 6) Beta particles are the nuclei of helium atoms.
- 7) The energy of an electron is continuous and can be any value.
- 8) The ionization energy of sodium is lower than that of argon.
- 9) Ionic bonds are formed when two atoms share a pair of electrons.
- 10) Double bonds share 2 electrons.

Short Answers (3 points each)

- 11) Write 198.75 in scientific notation.
- 12) Convert 672 hours into weeks.
- 13) Convert 2608 centimeters into meters.
- 14) Give the significant digits for these numbers 0.00025, 0.109 and 45.26.
- 15) Add these weighed masses 319.543 g, 20.460 g, 0.0639 g, 45.6 g and 4.173 g.
- 16) Multiply the preceding measurements from #15.
- 17) Write the chemical formula for calcium chloride.
- 18) Write out the electron configuration for potassium K.

- 19) Which is the most electronegative Na, Mn or F?
- 20) Give an example of a polar molecule (not element).

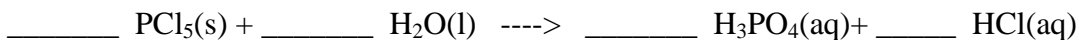
Problems (10 points each)

- 21) How many atoms are in ammonium sulfate $(\text{NH}_4)_2\text{SO}_4$?

What is its molecular mass?

How much would 0.35 moles of this compound weigh?

- 22) Balance the following reaction:



List 4 types of chemical reactions:

- 23) Balance the following reaction:



If 6.30 moles of hydrogen H_2 were consumed in the presence of excess nitrogen, how many moles of NH_3 would be produced and what would be the mass of NH_3 produced?

- 24) What volume will be occupied by 0.393 moles of nitrogen at 0.971 atm and 24 C?
 $R = 0.0821 \text{ L atm/K mol}$

What would the volume be at STP?

- 25) How many grams of AgNO_3 must be dissolved in 500 ml to make a 0.150 M solution of AgNO_3 ?

If it takes 46.8 ml of 0.661 M NaOH to titrate 25 ml of an HCl solution, what is the molarity of the HCl solution?

Bonus) If there is a concept or problem that you prepared for but that was not covered on the exam, you can use the space below to demonstrate your knowledge.

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