Chemistry 115 - Name

Dr. Cary Willard

Quiz 3A (20 points) September 29, 2008

All work must be shown to receive credit.

Avogadro’s number = 6.022 x 1023/mol

1. (3 points) Rutherford shot alpha particles at a thin sheet of gold. What did he observe and what did he propose as the structure of an atom based on his observations?

Rutherford observed that most of the particles traveled straight through the foil and were undeflected.

From this he theorized that atoms were mostly empty space with a dense nucleus in the center.

1. (6 points) Give the number of protons, neutrons, and electrons in an atom of 53V.

Protons \_\_\_23\_\_

Neutrons \_\_\_30\_\_

Electrons \_\_\_23\_\_

1. (3 points) Calculate the number of moles of molybdenum that have a mass of 7.33 g.

$$?mol Mo=7.33g Mo×\frac{1 mol Mo}{95.94 g Mo}=0.0764 g Mo$$

1. (3 points) Calculate the number of molecules of hexane, C6H14, in a 2.64 mol sample of hexane.

$$?molecules C\_{6}H\_{14}=2.64 mol C\_{6}H\_{14}×\frac{6.022×10^{23}molec C\_{6}H\_{14}}{1 mol C\_{6}H\_{14}}=1.59×10^{24}molec C\_{6}H\_{14}$$

1. (3 points) Calculate the number of moles of hydrogen atoms in a 3.50 mol sample of hexane.

$$?mol H=3.50 mol C\_{6}H\_{14}×\frac{14 mol H}{1 mol C\_{6}H\_{14}}=49.0 mol H$$

1. (2 points) Calculate the number of moles of eyes on 5 mol of aliens. (Draw your alien for me ☺.)

$$?mol eyes=5 mol aliens×\frac{???mol eyes}{1 mol aliens}= ????mol eyes$$

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Quiz 3B (20 points) September 29, 2008

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Avogadro’s number = 6.022 x 1023/mol

1. (3 points) Rutherford shot alpha particles at a thin sheet of gold. What did he observe and what did he propose as the structure of an atom based on his observations?

Rutherford observed that most of the particles traveled straight through the foil and were undeflected.

From this he theorized that atoms were mostly empty space with a dense nucleus in the center.

1. (6 points) Give the number of protons, neutrons, and electrons in an atom of 99Mo.

Protons \_\_\_42\_\_

Neutrons \_\_57\_\_

Electrons \_\_42\_\_

1. (3 points) Calculate the number of moles of molybdenum that have a mass of 4.87 g.

$$?mol Mo=4.87g Mo×\frac{1 mol Mo}{95.94 g Mo}=0.0508 g Mo$$

1. (3 points) Calculate the number of molecules of hexane, C6H14, in a 5.88 mol sample of hexane.

$$?molecules C\_{6}H\_{14}=5.88 mol C\_{6}H\_{14}×\frac{6.022×10^{23}molec C\_{6}H\_{14}}{1 mol C\_{6}H\_{14}}=3.54×10^{24}molec C\_{6}H\_{14}$$

1. (3 points) Calculate the number of moles of hydrogen atoms in a 4.50 mol sample of hexane.

$$?mol H=4.50 mol C\_{6}H\_{14}×\frac{14 mol H}{1 mol C\_{6}H\_{14}}=63.0 mol H$$

1. (2 points) Calculate the number of moles of eyes on 5 mol of aliens. (Draw your alien for me ☺ .)