Chemistry 115 - Name KEY

Dr. Cary Willard

Quiz 3A (20 points) September 23, 2008

All work must be shown to receive credit.

1. (8 points) A small metal horse is weighed and found to have a mass of 973.7 grams. The horse was then submerged in a large graduated cylinder containing 250.0 mL of water. The volume of the cylinder rose to 359.4 mL. Calculate the density of the metal in g/mL and predict its composition.

|  |  |
| --- | --- |
| element | density |
| V | 6.0 g/mL |
| Cr | 7.2 g/mL |
| Ni | 8.9 g/mL |
| Ag | 10.5 g/mL |
| Pd | 12.0 g/mL |

Mass horse 973.7 g

Volume horse + water 359.4 mL

Volume water 250.0 mL

Volume horse 109.4 mL

Density in g/mL 8.900 g/mL it is probably nickel

1. (3 points) John Dalton proposed a new theory based on the work of Democritus. Summarize the important parts of the theory that John Dalton proposed.

Dalton suggested that all matter is composed of indivisible particles which he called atoms.

He further suggested that like atoms had like properties and different atoms had different properties.

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 30Si.

Protons \_\_14 protons (from periodic table)\_\_\_\_

Neutrons \_\_16 neutrons (mass # 30 – atomic # 14 16)\_\_\_

Electrons \_\_14 electrons (same as protons for a neutral atom)\_\_\_

Chemistry 115 - Name KEY

Dr. Cary Willard

Quiz 3B (20 points) September 23, 2008

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1. (8 points) A small metal horse is weighed and found to have a mass of 787.7 grams. The horse was then submerged in a large graduated cylinder containing 250.0 mL of water. The volume of the cylinder rose to 359.4 mL. Calculate the density of the metal in g/mL and predict its composition.

|  |  |
| --- | --- |
| element | density |
| V | 6.0 g/mL |
| Cr | 7.2 g/mL |
| Ni | 8.9 g/mL |
| Ag | 10.5 g/mL |
| Pd | 12.0 g/mL |

Mass horse 787.7 g

Volume horse + water 359.4 mL

Volume water 250.0 mL

Volume horse 109.4 mL

Density in g/mL 7.200 g/mL it is probably chromium

1. (3 points) John Dalton proposed a new theory based on the work of Democritus. Summarize the important parts of the theory that John Dalton proposed.

Dalton suggested that all matter is composed of indivisible particles which he called atoms.

He further suggested that like atoms had like properties and different atoms had different properties.

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 59Mn.

Protons \_\_25 protons (from periodic table)\_\_\_\_

Neutrons \_\_34 neutrons (mass # 59 – atomic # 25 16)\_\_\_

Electrons \_\_25 electrons (same as protons for a neutral atom)\_\_\_