Chemistry 115 Name Key

Dr. Cary Willard

Quiz 4A (20 points) March 5, 2009

All work must be shown to receive credit. Avogadro’s number 6.022 x 1023/mol

1. (4 points) In what ways are isotopes alike?

Same number of protons

Same physical and chemical properties except mass

In what ways are they different?

Different numbers of neutrons

Different atomic masses

1. (4 points) Give the correct name or formula for the following compounds

|  |  |
| --- | --- |
| IUPAC Name | Formula |
| Titanium(III) sulfate | Ti2(SO4)3 |
| Aluminum hypobromite | Al(BrO)3 |
| Sodium phosphite | Na3PO3 |
| Chromium(II) hydroxide | Cr(OH)2 |

1. (3 points) Calculate the number of moles of molybdenum that contain 3.54 x 1021 atoms of molybdenum

$$?mol Mo=3.54×10^{21}atoms Mo×\frac{1 mol Mo}{6.022 ×10^{23}atom Mo}=0.00588 mol Mo$$

1. (3 points) Calculate the mass of 3.87 moles of platinum.

$$?g Pt=3.87 mol Pt×\frac{195.1 g Pt}{1 mol Pt}=755 g Pt$$

1. (3 points) Calculate the molar mass of sodium oxalate, (Na2C2O4)

$$2\left(\frac{22.99g}{mol}\right)+2\left(\frac{12.01 g}{mol}\right)+4\left(\frac{16.00g}{mol}\right)=134.0 g/mol$$

1. (3 points) Calculate the number of atoms of carbon in 3.50 mol of sodium oxalate.

$$?atom C=3.50 mol Na\_{2}C\_{2}O\_{4}×\frac{6.022 ×10^{23} molec Na\_{2}C\_{2}O\_{4}}{1 mol Na\_{2}C\_{2}O\_{4}}×\frac{2 atom C}{1 molec Na\_{2}C\_{2}O\_{4}}=4.21×10^{24}atoms C$$

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1. (4 points) In what ways are isotopes alike?

Same number of protons

Same physical and chemical properties except mass

In what ways are they different?

Different numbers of neutrons

Different atomic masses

1. (4 points) Give the correct name or formula for the following compounds

|  |  |
| --- | --- |
| IUPAC Name | Formula |
| Cobalt(III) sulfate | Co2(SO4)3 |
| Aluminum perbromate | Al(BrO4)3 |
| Potassium phosphite | K3PO3 |
| Copper(II) hydroxide | Cu(OH)2 |

1. (3 points) Calculate the number of moles of molybdenum that contain 7.32 x 1021 atoms of molybdenum

$$?mol Mo=7.32×10^{21}atoms Mo×\frac{1 mol Mo}{6.022 ×10^{23}atom Mo}=0.0122 mol Mo$$

1. (3 points) Calculate the mass of 4.64 moles of platinum.

$$?g Pt=4.64 mol Pt×\frac{195.1 g Pt}{1 mol Pt}=905 g Pt$$

1. (3 points) Calculate the molar mass of sodium oxalate, (Na2C2O4)

$$2\left(\frac{22.99g}{mol}\right)+2\left(\frac{12.01 g}{mol}\right)+4\left(\frac{16.00g}{mol}\right)=134.0 g/mol$$

1. (3 points) Calculate the number of atoms of carbon in 2.96 mol of sodium oxalate.

$$?atom C=2.96 mol Na\_{2}C\_{2}O\_{4}×\frac{6.022 ×10^{23} molec Na\_{2}C\_{2}O\_{4}}{1 mol Na\_{2}C\_{2}O\_{4}}×\frac{2 atom C}{1 molec Na\_{2}C\_{2}O\_{4}}=3.56×10^{24}atoms C$$