Chemistry 115 Name Key

Dr. Cary Willard

Quiz 5a (20 points) March 9, 2010

Must show all work to receive credit. Use proper significant figures.

Avogadro’s number – 6.022 x 1023 particles/mol

1. (8 points) Give the appropriate name or formula as appropriate.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Formula |  | Formula | Name |
| Sodium phosphate | Na3PO4 |  | KBrO | Potassium perbromite |
| Calcium nitrite | Ca(NO2)2 |  | VCl3 | Vanadium(III) chloride |
| Iron(III) perchlorate | Fe(ClO4)3 |  | Ag2SO3 | Silver sulfite |
| Carbon disulfide | CS2 |  | CaCO3 | Calcium carbonate |

1. (6 points) Determine the number of atoms of oxygen in 17.35 g of Ca3(PO4)2.

$$?atom O=17.35 g Ca\_{3}\left(PO\_{4}\right)\_{2}×\frac{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}{310.2 g Ca\_{3}\left(PO\_{4}\right)\_{2}}$$

$$×\frac{8 mol O}{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}×\frac{6.022×10^{23}atom O}{1 mol O}=2.69×10^{23}atom O$$

1. (6 points) The percent composition of bismuth oxide is 89.7% Bi and 10.3% O. Calculate the empirical formula of bismuth oxide.

$$?mol Bi=89.7 g Bi×\frac{1 mol Bi}{208.98 g Bi}=0.429 mol Bi$$

$$?mol O=10.3 g O×\frac{1 mol O}{16.00 g O}=0.644 mol O$$

$$Bi\_{\frac{0.429}{0.429}}O\_{\frac{0.644}{0.429}} \rightarrow Bi\_{1}O\_{1.50} \rightarrow Bi\_{2}O\_{3}$$

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Quiz 5b (20 points) March 9, 2010

Must show all work to receive credit. Use proper significant figures.

Avogadro’s number – 6.022 x 1023 particles/mol

1. (8 points) Give the appropriate name or formula as appropriate.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Formula |  | Formula | Name |
| lithium phosphite | Li3PO3 |  | Zn(ClO4)2 | Zinc perchlorate |
| Magnesium nitrate | Mg(NO3)2 |  | N2O4 | Dinitrogen tetroxide |
| Copper(II) hypoiodite | Cu(IO)2 |  | CaCO3 | Calcium carbonate |
| Zinc nitride | Zn3N2 |  | TiSO3 | Titanium(III) sulfite |

1. (6 points) Determine the number of atoms of oxygen in 31.25 g of Ca3(PO4)2.

$$?atom O=17.35 g Ca\_{3}\left(PO\_{4}\right)\_{2}×\frac{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}{310.2 g Ca\_{3}\left(PO\_{4}\right)\_{2}}$$

$$×\frac{8 mol O}{1 mol Ca\_{3}\left(PO\_{4}\right)\_{2}}×\frac{6.022×10^{23}atom O}{1 mol O}=2.69×10^{23}atom O$$

1. (6 points) The percent composition of manganese phosphide is 72.7% Mn and 27.3% P. Calculate the empirical formula of manganese phosphide.

$$?mol Mn=72.7 g Mn×\frac{1 mol Mn}{54.94 g Mn}=1.32 mol Mn$$

$$?mol P=27.3 g P×\frac{1 mol P}{30.974 g P}=0.881 mol P$$

$$Mn\_{\frac{1.32}{0.881}}P\_{\frac{0.881}{0.881}} \rightarrow Mn\_{1.50}P\_{1} \rightarrow Mn\_{3}P\_{2}$$