Chemistry 115 Name KEY

Dr. Cary Willard

Quiz 4A (20 points) March 3, 2009

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

1. (6 points) An unknown element contains 23 protons, 21 electrons, and has a mass number of 52. Answer the following questions.
	1. What is the atomic number of this element?

23

* 1. What is the name of this element?

vanadium

* 1. How many neutrons does this element contain?

52 – 23 = 29 neutrons

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

Same number of protons

Same chemical and physical properties except for mass

In what ways are they different?

Different numbers of neutrons

Different masses

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

|  |  |
| --- | --- |
| IUPAC Name | Formula |
| Copper(II) hypochlorite | Cu(ClO)2 |
| Calcium phosphate | Ca3(PO4)2 |
| Sodium carbonate | Na2CO3 |
| Nickel(II) nitrite | Ni(NO2)2 |

1. (3 points) Calculate the number of moles of copper that contain 8.34 x 1021 atoms of copper

$$?mol Cu=8.34×10^{21}atoms Cu×\frac{1 mol Cu}{6.022 ×10^{23}atoms Cu}=0.0138 mol Cu$$

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

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

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Quiz 4B (20 points) March 3, 2009

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

1. (6 points) An unknown element contains 25 protons, 23 electrons, and has a mass number of 56. Answer the following questions.
	1. What is the atomic number of this element?

25

* 1. What is the name of this element?

manganese

* 1. How many neutrons does this element contain?

56 – 25 = 31 neutrons

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

Same number of protons

Same chemical and physical properties except for mass

In what ways are they different?

Different numbers of neutrons

Different masses

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

|  |  |
| --- | --- |
| IUPAC Name | Formula |
| cobalt(II) perchlorate | Co(ClO4)2 |
| Barium phosphate | Ba3(PO4)2 |
| Potassium carbonate | K2CO3 |
| Iron(II) nitrite | Fe(NO2)2 |

1. (3 points) Calculate the number of moles of copper that contain 5.23 x 1021 molecules of copper

$$?mol Cu=5.23×10^{21}atoms Cu×\frac{1 mol Cu}{6.022 ×10^{23}atoms Cu}=0.00868 mol Cu$$

1. (3 points) Calculate the mass of 5.22 moles of platinum.

$$?g Pt=5.22 mol Pt×\frac{195.1 g Pt}{1 mol Pt}=1020 g Pt$$