Chemistry 115 Name key

Dr. Cary Willard

Quiz 7a (20 points) October 28, 2010

All work must be shown to receive credit. NA = 6.022 x 1023/mol

Carbon disulfide and carbon monoxide are produced when carbon is heated with sulfur dioxide.

9 C(s) + 2 SO2(g) 🡪 5 CS2(l) + 4 CO(g)

1. (5 points) What mass of carbon disulfide will be produced from the reaction of 4.00 g of solid carbon with 6.00 g of sulfur dioxide gas?

$$?g CS\_{2}=4.00 g C×\frac{1 mol C}{12.01 g C}×\frac{5 mol CS\_{2} }{9 mol C}×\frac{76.14 g CS\_{2}}{1 mol CS\_{2}}=14.1 g CS\_{2}$$

$$?g CS\_{2}=6.00 g SO\_{2}×\frac{1 mol SO\_{2}}{64.06 g SO\_{2}}×\frac{5 mol CS\_{2} }{2 mol SO\_{2}}×\frac{76.14 g CS\_{2}}{1 mol CS\_{2}}=$$

1. (3 points) If 12.9g of carbon disulfide are produced, what is the percent yield?

$$\% yield=\left(\frac{12.9 g CS\_{2} produced }{14.1 g CS\_{2} expected}\right)×100\%=91.5\% yield$$

1. (4 points) Describe how the bonding in ionic and covalent compounds differs. (Give a complete answer, tell me about the bonds, not just types of atoms involved.)

Ionic bonds form between metals and non-metals and the ions are held together by electrostatic attractions

Covalent bonds form between non-metals and the atoms are held together by shared electrons bonds.

1. (2 points) Which electrons are involved in covalent bonding?

Valence electrons

1. (6 points) Draw an electron dot diagram for nitrogen tribromide (NBr3). Be sure to show all bonds and lone(non-bonding) electrons.



Chemistry 115 Name key

Dr. Cary Willard

Quiz 7b (20 points) October 28, 2010

All work must be shown to receive credit. NA = 6.022 x 1023/mol

Carbon disulfide and carbon monoxide are produced when carbon is heated with sulfur dioxide.

9 C(s) + 2 SO2(g) 🡪 5 CS2(l) + 4 CO(g)

1. (5 points) What mass of carbon disulfide will be produced from the reaction of 5.00 g of solid carbon with 7.00 g of sulfur dioxide gas?

$$?g CS\_{2}=5.00 g C×\frac{1 mol C}{12.01 g C}×\frac{5 mol CS\_{2} }{9 mol C}×\frac{76.14 g CS\_{2}}{1 mol CS\_{2}}=17.6 g CS\_{2}$$

$$?g CS\_{2}=7.00 g SO\_{2}×\frac{1 mol SO\_{2}}{64.06 g SO\_{2}}×\frac{5 mol CS\_{2} }{2 mol SO\_{2}}×\frac{76.14 g CS\_{2}}{1 mol CS\_{2}}=$$

1. (3 points) If 16.2 g of carbon disulfide are produced, what is the percent yield?

$$\% yield=\left(\frac{16.2 g CS\_{2} produced }{17.6 g CS\_{2} expected}\right)×100\%=92.0\% yield$$

1. (4 points) Describe how the bonding in ionic and covalent compounds differs. (Give a complete answer, tell me about the bonds, not just types of atoms involved.)

Ionic bonds form between metals and non-metals and the ions are held together by electrostatic attractions

Covalent bonds form between non-metals and the atoms are held together by shared electrons bonds.

1. (2 points) Which electrons are involved in covalent bonding?

Valence electrons

1. (6 points) Draw an electron dot diagram for oxygen dichloride (OCl2). Be sure to show all bonds and lone(non-bonding) electrons.



Chemistry 115 Name key

Dr. Cary Willard

Quiz 7c (20 points) November 2, 2010

All work must be shown to receive credit. NA = 6.022 x 1023/mol

Carbon disulfide and carbon monoxide are produced when carbon is heated with sulfur dioxide.

9 C(s) + 2 SO2(g) 🡪 5 CS2(l) + 4 CO(g)

1. (5 points) What mass of carbon monoxide will be produced from the reaction of 5.00 g of solid carbon with 7.00 g of sulfur dioxide gas?

$$?g CO=5.00 g C×\frac{1 mol C}{12.01 g C}×\frac{4 mol CO }{9 mol C}×\frac{28.01 g CO}{1 mol CO}=5.18 g CO$$

$$?g CO=7.00 g SO\_{2}×\frac{1 mol SO\_{2}}{64.06 g SO\_{2}}×\frac{4 mol CO }{2 mol SO\_{2}}×\frac{28.01 g CO}{1 mol CO}=6.12 g CO$$

1. (3 points) If 4.83 g of carbon monoxide are produced, what is the percent yield?

$$\% yield=\left(\frac{4.83 g CO produced }{5.18 g CO expected}\right)×100\%=93.2 \% yield$$

1. (4 points) Describe how the bonding in ionic and covalent compounds differs. (Give a complete answer, tell me about the bonds, not just types of atoms involved.)

Ionic bonds form between metals and non-metals and the ions are held together by electrostatic attractions

Covalent bonds form between non-metals and the atoms are held together by shared electrons bonds.

1. (2 points) Which electrons are involved in covalent bonding?

Valence electrons

1. (6 points) Draw an electron dot diagram for dibromomethanal (Br2CO). Be sure to show all bonds and lone(non-bonding) electrons. (C is central atom, Br’s and O bonded directly to C)



Chemistry 115 Name key

Dr. Cary Willard

Quiz 7c (20 points) October 28, 2010

All work must be shown to receive credit. NA = 6.022 x 1023/mol

Carbon disulfide and carbon monoxide are produced when carbon is heated with sulfur dioxide.

5 C(s) + 2 SO2(g) 🡪 5 CS2(l) + 4 CO(g)

1. (5 points) What mass of carbon monoxide will be produced from the reaction of 6.00 g of solid carbon with 8.00 g of sulfur dioxide gas?

$$?g CO=6.00 g C×\frac{1 mol C}{12.01 g C}×\frac{4 mol CO }{9 mol C}×\frac{28.01 g CO}{1 mol CO}=6.21 g CO$$

$$?g CO=8.00 g SO\_{2}×\frac{1 mol SO\_{2}}{64.06 g SO\_{2}}×\frac{4 mol CO }{2 mol SO\_{2}}×\frac{28.01 g CO}{1 mol CO}=7.00 g CO$$

1. (3 points) If 5.94 g of carbon monoxide are produced, what is the percent yield?

$$\% yield=\left(\frac{5.94 g CO produced }{6.21 g CO expected}\right)×100\%=95.7 \% yield$$

1. (4 points) Describe how the bonding in ionic and covalent compounds differs. (Give a complete answer, tell me about the bonds, not just types of atoms involved.)

Ionic bonds form between metals and non-metals and the ions are held together by electrostatic attractions

Covalent bonds form between non-metals and the atoms are held together by shared electrons bonds.

1. (2 points) Which electrons are involved in covalent bonding?

Valence electrons

1. (6 points) Draw an electron dot diagram for dichloromethane thiol (Cl2CS). Be sure to show all bonds and lone(non-bonding) electrons. (C is central atom, Cl’s and S bonded directly to C)

