

NAME: KEYLab Section: 1(TuTh@3) 2(TuTh@9) 3(MW@1)CHM 101
20 points

Quiz #2

Fall 2007
30 minutesChemistry, 7th ed., Zumdahl & Zumdahl, sections 1.7, 1.8, 2.1-2.5

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revised 10/2/2007

Unless otherwise specified, each question is worth 4 points.

1. Convert room temperature, 22.7°C, to °F and K.

$$1.8 \times 22.7 + 32 = 41 + 32 = \boxed{73^\circ\text{F}}$$

$$22.7 + 273.15 = 295.85 \text{ K} = \boxed{295.9 \text{ K}}$$

2. A graduated cylinder contains 84.5 mL of water (as shown below). A small piece of metal weighing 28.35 grams is dropped into the graduated cylinder, and the level of the water rises to 95.0 mL. What is the density of the metal?

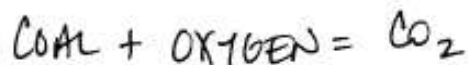


$$D = \frac{m}{V} = \frac{28.35\text{g}}{(95.0 - 84.5)\text{mL}} = \frac{28.35\text{g}}{10.5\text{mL}}$$

$$= \boxed{2.70 \text{ g/mL}}$$

3. When precisely 10.00 grams of coal (pure carbon) is burned in air, 36.64 grams of carbon dioxide (CO
- ₂
-) is formed. How many grams of oxygen reacted with the carbon to form the carbon dioxide?

(CONSERVATION OF MASS)



$$10.00\text{g} + \text{O}_2\text{g} = 36.64\text{g}$$

$$\text{O}_2 = 36.64 - 10.00$$

$$= \boxed{26.64\text{g}}$$

Unless otherwise specified, each question is worth 4 points.

4. In terms of atoms and atomic theory, briefly describe:

a. a chemical compound

- ATOMS OF DIFFERENT ELEMENTS "COMBINE"
- SAME RELATIVE NUMBERS OF ATOMS

b. a chemical reaction

- RE-ARRANGEMENT OF ATOMS
- ATOMS NOT CHANGED

5. Complete the following table. (Each "blank" is worth 1 point.)

SUBATOMIC PARTICLE	RELATIVE MASS	CHARGE	LOCATION
PROTON	about the same as a neutron	+ (positive)	NUCLEUS
neutron	≈ PROTON	(neutral)	nucleus
electron	≈ 1/2000 of a proton or neutron	- (NEG.)	"exterior" of the atom

POSSIBLY HELPFUL INFORMATION:

$$K = ^\circ C + 273.15$$

$$^\circ F = 1.8(^{\circ}C) + 32^{\circ}F$$