

General Chemistry: Final Exam Review

Name: _____

Chapter 1

- 1) Which of the following below is quantitative
Red smoke banana smell 7.4 grams solid to liquid change
- 2) Put the following numbers into scientific notation
890000 .00325 22000
- 3) How many significant figures are in: 0.0078 _____ 400 _____ 500.0 _____ 0.030 _____
- 4) What is the percent error if you calculate the density of aluminum to be 2.94 g/mL and the theoretical density of aluminum is 2.70 g/mL?
- 5) Is the data accurate, precise, or both?
Experimental data: 5.57, 5.56, 5.58 Theoretical value: 5.59

Chapter 2

- 6) What is the density of an object if it has a mass of 28 grams and moves the water level from 4.5 mL to 11.5 mL?

Chapter 3

- 7) *Briefly describe the main idea of each scientist listed below:*

Thomson

Rutherford

Mendeleev

Bohr

- 8) How many protons, electrons and neutrons are in each of the following

${}_{13}^{27}\text{Al}^{+3}$

Carbon-13

Fe^{+2}

S^{-2}

p=

p=

p=

p=

n=

n=

n=

n=

e=

e=

e=

e=

- 9) What is the average atomic mass of element "X" if it is 74% X-45, 18% X-46 and 8% X-47?

Chapter 4

- 10) If carbon has a half-life of 5730 years, how much of a 800 gram sample will be left after 17190 years?

11) What element has the electron configuration: $1s^2 2s^2 2p^5$ _____

12) Which element has electron configuration $ns^2 np^3$ Li N Si F

Chapter 5

13) Which elements would have similar properties to Na?? Mg K Al Li

14) What family of elements has 8 valence electrons? _____

Chapter 7

15) *Name the following. Indicate "I" for Ionic and "C" for Covalent in the blank.*

____ SiO₂

____ Mg₃N₂

____ AlF₃

____ Cu₂O

____ Cl₂O₇

____ N₂O₄

16) *Write the formula of the following:*

____ Lithium nitride

____ diphosphorus pentoxide

____ Iron (III) sulfide

____ nitrogen tetroxide

____ Magnesium hydroxide

____ Aluminum phosphide

17) What happens to electrons in an ionic bond? _____ covalent bond? _____

Chapter 8

18) Draw the Lewis Dot structure of the following elements:

Al

N

O

Ar

19) Draw the Lewis Dot structure of the following molecules and name the shape:

CH₄

BF₃

NH₃

Chapter 9

20) What are the seven diatomic elements? _____

Balance each of the following reactions. Then identify the "type" of reaction in the blank.

21) Type: _____ _____ FeBr₃ + _____ Cl₂ → _____ FeCl₃ + _____ Br₂

22) Type: _____ _____ Ca₃N₂ + _____ K₂S → _____ CaS + _____ K₃N

23) Type: _____ _____ Li₃P → _____ Li + _____ P

24) Type: _____ _____ Al + _____ I₂ → _____ AlI₃

Chapter 10

Find the percent composition of each element in the following compounds:

25) H_3PO_3 %K = _____ %P = _____ %O = _____

26) $\text{C}_6\text{H}_{12}\text{O}_6$ %C = _____ %H = _____ %O = _____

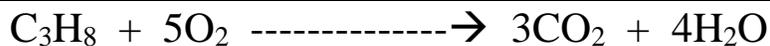
27) Convert 68 g of water to moles.

28) Convert 52 liters of oxygen (O_2) at STP to grams.

29) How many molecules are equivalent to 4.5 mol of glucose ($\text{C}_6\text{H}_{12}\text{O}_6$)?

Chapter 11

Use the reaction in the box below to answer questions #29-30



30) If 128g of oxygen react with propane, how many grams of carbon dioxide will be produced?

31) If 3 moles of water were produced, how many moles of C_3H_8 were consumed?

Chapter 12

32) Convert: $22^\circ\text{C} =$ _____ Kelvin

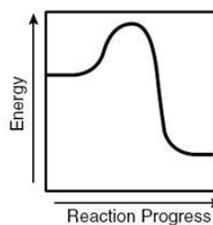
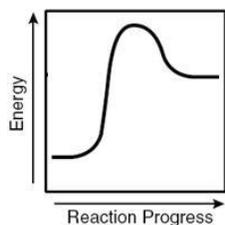
33) What are the three characteristics of a catalyst?

34) Define: "absolute zero" _____

35) Define: *sublimation*= _____ *condensation*= _____

36) The specific heat of aluminum is $0.900 \frac{\text{J}}{\text{g}^\circ\text{C}}$. How much heat is required to raise the temperature of a 55.0 g block of aluminum from 35.0°C to 95.0°C?

37) Identify the energy curves as endothermic or exothermic. Describe what happens to energy.



Type: _____
Energy: _____

Chapter 13

38) A balloon has a volume of 8 liters with a pressure of 770 mmHg. If the pressure is decreased to 630 mmHg, what is the new volume of the balloon?

39) In a closed system, 4 mol of CO₂ is in a container with a volume of 4.5 L and a temperature of 35°C. What is the pressure of this system in kPa?

$R = 8.31 \frac{\text{kPa} \cdot \text{dm}^3}{\text{moles} \cdot \text{K}}$

40) A tire starts off with a volume of 3.5 L at a temperature of 35°C. What will be the new volume if the temperature of the tire increases to 65°C?

Chapter 15

41) What is the molarity of a solution containing 117.68 grams of H₂SO₄ diluted in 3 L of water?

42) What is the final concentration if 300.0 mL of a 2.0 M HCl solution are diluted to 800.0 mL?

43) Briefly explain why water and oil do not mix.

Chapter 18

44) Define pH: _____

45) If pH = 8, then pOH = _____

If pOH = 2, then pH = _____

46) If [H⁺] = 1 x 10⁻⁵ then pH = _____

If [OH⁻] = 1 x 10⁻³ then pH = _____