

NAME:

CHEMISTRY I HONORS MID-COURSE REVIEW

BLOCK:

Chapter 1: Matter & Change

1) Define the following: and Give Examples

- A. an atom
- B. an element
- B. a compound
- C. a homogenous mixture
- D. a heterogeneous mixture
- E. physical property
- F. chemical property
- G. Intensive Property
- H. Extensive Property

2) How would you determine the difference between endothermic and exothermic reactions?

3) What are the four indications of a chemical reaction?

4) Describe the phases of in terms of particle packing, volume, shape, amount of average kinetic energy?

- A. solid
- B. liquid
- C. gas

5) Please separate a mixture of sand, iron, and salt. Classify the material at each step of the separation.

Chapter 2: Measurements & Calculations

6) How many significant figures are in the following: A. 506.00 mL B. 360.0 mL
C. 0.02037 mL D. 4.0×10^9 mL

7) What are the SI units prefixes and meaning arranged in order from smallest to largest?

8) Can you determine the density of a metal sample using only a balance and a graduated cylinder. The student obtained the data shown:

	Volume (mL)	Mass (g)
Empty Graduated Cylinder	0.0	47.16
Cylinder and Water	50.0	67.16
Cylinder, Water and Metal Cube	102.0	297.50

9) Why is density important to a chemist?

Chapter 3: Atoms

10) A. What is the law of definite proportions?

B. What is the law of multiple proportions?

C. What is the Law of Conservation of Matter?

A student heated a sample of potassium chlorate in a crucible and collected the data below:

Mass of Crucible	25.525 grams
Mass of Crucible and Sample before the reaction	30.615 grams
Mass of Crucible and Product after the reaction	28.629 grams

B) Did the student prove the Law of Conservation of Matter?

C) What do you think happened in the reaction?

D) should there be a change to the design of the experiment?

11) Which elements on the periodic table can form:

- A) an anion that contains 10 electrons, 10 neutrons, and 9 protons?
- B) a cation with 10 electrons, 12 neutrons, and 11 protons

12) A) What do elements in the same row have in common?

B) What do elements in the same period have in common?

13) Describe in terms of mass, charge, and location:

- A. electron
- B. neutron
- C. proton

14) What were the contributions of the following Scientists:

- A. Bohr
- B. Miliken
- C. Dalton
- C. Rutherford
- D. Thompson

Chapter 4: Electron Arrangement

15) What are the electron configurations for the following elements:

- A. Lithium
- B. Fluorine
- C. Neon
- E. Copper

16) What do the four quantum numbers describe

- A. Principal Quantum Number (n)
- B. Angular Momentum Quantum Number (l)
- C. Magnetic Quantum Number (m_l)
- D. Spin Quantum Number (m_s)

17) How many electrons are needed to completely fill the following energy levels?

- A. 1
- B. 2
- C. 3
- D. 4

18) Describe how an atom can emit colored light.

19) Which is a greater transition a red color or purple color? Explain.

20) Describe a simple method chemists can use to determine the metal contained within a salt.

Chapter 5: Periodic Trends

21) A) Define electronegativity.

B) Explain Which of the following pairs is most electronegative

- A. Fluorine or Bromine
- B. Oxygen or Boron

22) a) What is the trend on the periodic table within the same group with increasing atomic number the atomic radii

b) within the same period?

23) Explain if chlorine an appropriate substitute for fluorine in chemical reaction in a pinch?

24) Describe the three main classes of elements and where they are found on the periodic table

25) Compare and contrast the elements magnesium and calcium

26) a) What is the name of the group of elements react most violently with water?

b) most unreactive elements?

c) radioactive?

d) hard, ductile, shiny and malleable

- 27) What are the contributions of the following
- A. Bohr
 - B. Mendeleev
 - C. Mosely

28) A) Explain what is the most reactive metal is

B) non-metal

Lab Questions : Identify & use

- A. a beaker
- B. a flask
- C. a graduated cylinder
- E. a thermometer
- F. A digital balance

Computations:

1. calcium phosphate has the chemical formula $\text{Ca}_3(\text{PO}_4)_2$. According to the formula, what is the **percent metal** in the compound?

2. Aluminum Sulfate has the chemical formula $\text{Al}_2(\text{SO}_4)_3$. What is the **molar mass** of the compound?

3. If **3.50 moles** of calcium hydroxide ($\text{Ca}(\text{OH})_2$) are needed for an experiment, how many **grams** should be massed out?

4) **45.0 grams** of carbon dioxide gas (CO_2) escape from a leaky container How many **moles** of the gas were lost?

5. **2.25×10^{23} atoms** of Magnesium (**Mg**) are need to react in an experiment, how many **grams** should be massed out

6) If 2.23×10^{24} molecules of oxygen gas were used in an experiment, how many grams were consumed?

7) water has a specific heat of $4.184 \text{ J/g}^\circ\text{C}$. How much energy is required to heat 50.0 grams of water at 22.0°C to 80.0°C ?

8) what is the specific heat of a material if 5.507×10^{-2} pounds of the material required 96.25 joules of energy to raise the temperature from 20.0°C to 30.00°C ?

9. Find the formula and name the hydrate for barium chloride $\text{BaCl}_2 \cdot ? \text{H}_2\text{O}$

Mass of Crucible	17.522 grams
Mass of Crucible and hydrate	33.802 grams
Mass of Crucible and anhydrous material	31.402 grams

10. 356.2 grams of a 86.5% pure Barium Chloride BaCl_2 are massed out. How many moles of chloride ions are used?

10 A Please determine the element below and Determine The QNS for the electron

10B. Please Draw the Energy Diagram and circle the electron with the QNS given

<p style="text-align: center;">Element _____</p> <p style="text-align: center;">n = _____</p> <p style="text-align: center;">l = _____</p> <p style="text-align: center;">m = _____</p> <p style="text-align: center;">s = _____</p>	<p style="text-align: center;">Element Bromine (Br)</p> <p style="text-align: center;">n = 2</p> <p style="text-align: center;">l = 1</p> <p style="text-align: center;">m = 0</p> <p style="text-align: center;">s = +1/2</p>
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C. Compare and contrast the 1s sublevel and the 2s sublevel in terms of shape, energy, number of electrons that fill. Compare and contrast the 2s and 2p sublevels

D. Why are line emission spectrums and why are they important to chemists?

E. What element has the electron configuration : $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^2$?

F. Write the electron configuration for Bromine:

G. What is $[\text{Ne}] 3s^1$

H. What is the NGEC for Copper: