

Chapter 5 Quiz (30 Points)

True/False Questions (10 Points)

1. **True/False:** The law of constant composition states that a given chemical compound always contains the same proportion by mass of its constituent elements.
Point Value: 1
2. **True/False:** The formula for the sulfate ion is SO_4^{2-} .
Point Value: 1
3. **True/False:** N_2O_4 is the molecular formula for dinitrogen tetraoxide and its empirical formula is NO_2 .
Point Value: 1
4. **True/False:** In the compound NaCl , Cl is the cation.
Point Value: 1
5. **True/False:** The structural formula of a compound shows the exact number of atoms of each element in a molecule as well as how these atoms are connected.
Point Value: 1
6. **True/False:** HCl is an example of a covalent compound.
Point Value: 1
7. **True/False:** The nitrate ion is NO_3^- .
Point Value: 1
8. **True/False:** H_2SO_4 is named sulfurous acid.
Point Value: 1
9. **True/False:** The compound with the formula Fe_2O_3 is named iron(III) oxide.
Point Value: 1
10. **True/False:** The empirical formula and molecular formula of a compound can sometimes be the same.
Point Value: 1

Multiple Choice Questions (20 points)

1. Which of the following is a correct empirical formula?
A) C_6H_6
B) C_2H_4
C) CH
D) C_2H_2
Point Value: 2
2. Which one of the following is an example of a polyatomic ion?
A) Cl^-
B) O^{2-}
C) NH_4^+
D) Na^+
Point Value: 2

3. The number of sulfur atoms in H_2SO_4 is:

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

Point Value: 3

4. How many nitrogen atoms are present in $\text{Ca}(\text{NO}_3)_2$?

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

Point Value: 2

5. Which of the following has the highest formula mass?

- A) H_2O_2
- B) CO_2
- C) CH_4
- D) C_2H_6

Point Value: 2

6. What is the formula mass of NaHCO_3 (sodium bicarbonate)?

- A) 84.01 amu
- B) 86.08 amu
- C) 82.03 amu
- D) 88.02 amu

Point Value: 2

7. Name HNO_3 ?

- A) Nitrous acid
- B) Nitric acid
- C) Hydrogen nitrate
- D) Hydrogen nitrous acid

Point Value: 2

8. Which of the following is a covalent compound?

- A) NaCl
- B) K_2O
- C) CO_2
- D) Al_2O_3

Point Value: 2

9. What is the percent mass of hydrogen in hydrogen peroxide, H_2O_2 ?

- A) 5.88%
- B) 94.12%
- C) 42.08%
- D) 2.94%

Point Value: 2

10. Calculate the percent mass of carbon in acetic acid, CH_3COOH .

A) 47.3%

B) 40.0%

C) 54.0%

D) 60.0%

Point Value: 2