

Quiz Name: Chem V20 Exam 2 (5)

Number of Questions: 20 Total Points: 40

Joseph Bteracke

Number of Correct: 32 / 40 = 80%

#	Answer	Student	Earned	Possible	Correct
1	D	D	2	2	C
2	A	A	2	2	C
3	A	A	2	2	C
4	B	B	2	2	C
5	D	C	0	2	X
6	B	B	2	2	C
7	B	D	0	2	X
8	B	B	2	2	C
9	A	A	2	2	C
10	C	C	2	2	C
11	D	D	2	2	C
12	C	B	0	2	X
13	B	B	2	2	C
14	A	C	0	2	X
15	C	C	2	2	C
16	B	B	2	2	C
17	A	A	2	2	C
18	A	A	2	2	C
19	A	A	2	2	C
20	C	C	2	2	C

MC : 32/40

FR : 56/60

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88/100

Name		Joseph Bteracke				
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Name: Joseph Peteracke

21. A mystery element Q occurs as three isotopes. Analysis of a sample of Q showed:

Isotope	Mass (amu)	Abundance (%)
A	2.45	32.00
B	3.33	14.00
C	6.76	54.00

Calculate the average atomic mass of Q.

$$(A \cdot \%A) + (B \cdot \%B) + (C \cdot \%C) = \text{Avg}$$
$$(2.45 \cdot .32) + (3.33 \cdot .14) + (6.76 \cdot .54)$$
$$(0.784) + (0.4662) + (3.6504)$$
$$= \boxed{4.9006 \text{ amu}} \quad (-1)$$

22. A solution is composed of 343 mg of NaCl (salt) dissolved in 10.43 g of water. What is the percent composition of NaCl in this solution?

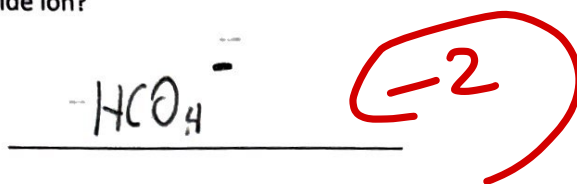
343 mg NaCl    10.43 g of water

$$\% = \frac{A}{\text{total}} \times 100$$

$$343 \text{ mg NaCl} \times \frac{1 \text{ g}}{1000 \text{ mg}} = 0.343 \text{ g NaCl}$$

$$\frac{0.343 \text{ g NaCl}}{10.773 \text{ g total}} \times 100 = \% \text{ NaCl} = \boxed{3.18 \% \text{ NaCl}} \quad \checkmark$$

What is the correct formula for a cyanide ion?



24. How many g is equivalent to  $2.23 \times 10^{12}$  molecules of  $\text{Al}_2(\text{SO}_4)_3$ ?

$$2.23 \times 10^{12} \text{ molecules } \text{Al}_2(\text{SO}_4)_3 \times \frac{1 \text{ mol}}{6.022 \times 10^{23} \text{ molecules}}$$

$$3.703 \text{ mol } \text{Al}_2(\text{SO}_4)_3 \times \frac{267.18 \text{ g}}{1 \text{ mol}} = \boxed{970.853 \text{ g } \text{Al}_2(\text{SO}_4)_3}$$

$2 \text{ Al} \quad 2(27) \quad 54$   
 $3 \text{ S} \quad 3(32.06) \quad 96.18$   
 $(3)(4) \text{ O} = 16(3)(4) \quad 112$

25. A compound is composed of 39.341% carbon (C), 8.254% hydrogen (H), and 52.406% oxygen (O)

a) Determine the empirical formula

$$\begin{array}{l} \text{C} \left| 39.341 \text{ g} \times \frac{1 \text{ mol}}{12.01 \text{ g}} = 3.275 / 3.275 = 1 \times 2 = 2 \right. \\ \text{H} \left| 8.254 \text{ g} \times \frac{1 \text{ mol}}{1.01 \text{ g}} = 8.172 / 3.275 = 2.5 \times 2 = 5 \right. \\ \text{O} \left| 52.406 \text{ g} \times \frac{1 \text{ mol}}{16 \text{ g}} = 3.275 / 3.275 = 1 \times 2 = 2 \right. \end{array}$$



b) Determine the molecular formula of the compound if the experimental molar mass of the compound is 180.16 g/mol

$$2\text{C} : (2)(12.01) = 24.02$$

$$5\text{H} : (5)(1.01) = 5.05$$

$$2\text{O} : (2)(16) = 32$$

$$\hline 61.07$$

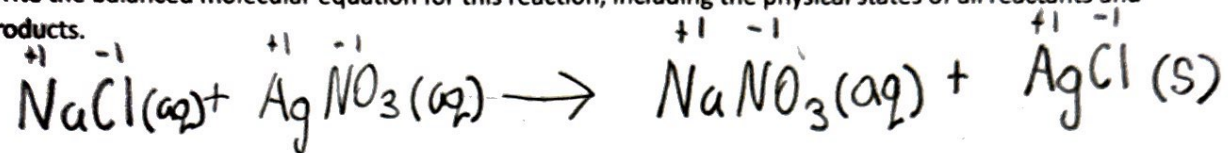
$$\frac{180.16 \text{ g/mol}}{61.07} = 2.9 = 3$$

$$3(\text{C}_2\text{H}_5\text{O}_2) = \boxed{\text{C}_6\text{H}_{15}\text{O}_6}$$

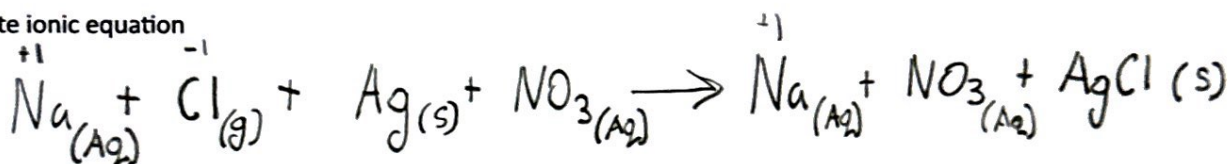
molar mass

Consider a reaction between NaCl and AgNO<sub>3</sub>.

- a) Write the balanced molecular equation for this reaction, including the physical states of all reactants and products.



- b) Write ionic equation



- c) Write net ionic equation

