

# General Chemistry

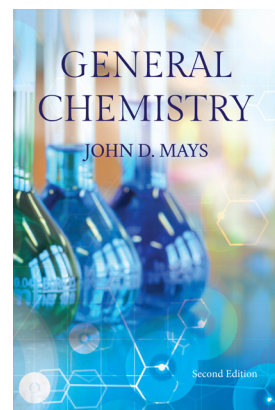
## Errata

We always strive to make our textbooks as accurate as possible, but sadly, errors are a reality. We very much appreciate friends who report errata that are not included in this document!

Please send new errata to [info@novaescienceandmath.com](mailto:info@novaescienceandmath.com)

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Last revised: February 14, 2019



## General Chemistry, 2nd Edition (2016)

### Chapter 2

12. Atomic mass of silicon totals to 28.055.

33c  $2.91 \times 10^{22}$  atoms.

### Chapter 3 Exercises

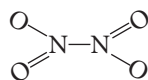
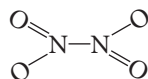
20i. This item should be neodymium.

23. The third answer should be No:  $[\text{Rn}]7s^25f^{14}$

38. Units in the answer should be  $\text{cm}^3$ .

46e. Correct answer is 1300.05 bar

### Chapter 5 Exercises



13 o.  $\text{N}_2\text{O}_4$

20a. the Be—F bond is ionic.

### Chapter 7 Exercises

14i. Reaction products should be  $\text{LiI}(\text{aq})$  and  $\text{K}(\text{s})$

20. The question should say that the reaction takes place in excess *carbon monoxide*.

### Chapter 9 Exercises

14b.  $4.20 \times 10^2$  kg

### Chapter 10 Exercises

34. First answer is 3.46 m

46. 8.50 atm

### Chapter 11 Exercises

4g. Answer is diprotic.

21. Add the following note to the answers given in the text: These answers all show the formation of carbonic acid,  $\text{H}_2\text{CO}_3$ . This acid is unstable and immediately breaks down to  $\text{CO}_2$  and water. Thus, each equation could be shown as:  $\dots + \text{CO}_2 + \text{H}_2\text{O}$ .

25. The first two sentences of the question should read: According to the activity series of metals (Table 7.2), copper does not react with sulfuric acid. However, if the acid is hot enough and concentrated enough, copper reacts with  $\text{H}_2\text{SO}_4$  in a single-replacement reaction.

28. Item (g) is basic.

### Chapter 12 Exercises

For exercise 2, the following descriptions should accompany the equations in the answer key.

a. Not a redox reaction.

b. Cl is reduced; it is the oxidizing agent. O is oxidized; it is the reducing agent.

c. S is reduced; it is the oxidizing agent. Br is oxidized; it is the reducing agent.

d. Not a redox reaction.

e. Cl is reduced; it is the oxidizing agent. I is oxidized; it is the reducing agent.

f. N is reduced; it is the oxidizing agent. S is oxidized; it is the reducing agent.

For exercise 7, the following descriptions should accompany the equations in the answer key.

a. oxidizing agent: Fe; reducing agent: S

b. oxidizing agent: Cl; reducing agent: I

c. oxidizing agent: Mn; reducing agent: C

d. oxidizing agent: Cl; reducing agent: O

e. oxidizing agent: N; reducing agent: Al

f. oxidizing agent: Mn; reducing agent: Cl

g. oxidizing agent: N; reducing agent: S

h. oxidizing agent: Mn; reducing agent: Br

### **Resource CD**

Exam 2

6. Answer should be 60.052 g/mol

Quiz 5

2. Result should be rounded to hundredths place, giving 24.31.

## Chapter 1 Answer Key

8f.  $739.22 \frac{\text{ft}^3}{\text{s}} \cdot \frac{7.48052 \text{ gal}}{1 \text{ ft}^3} \cdot \frac{3600 \text{ s}}{1 \text{ hr}} = 19,907,000 \frac{\text{gal}}{\text{hr}}$

## Chapter 4 Exercises

10. The problem statement should refer to cesium (Cs).

Answer:  $\text{Mg} < \text{Na} < \text{Ba} < \text{Cs}$

## Chapter 2 Text

Example 2.6: Oxygen should be  $2 \times 15.9994 = 31.9988$

Answer: Molar Mass = 60.052 g/mol

## Chapter 3 Exercises

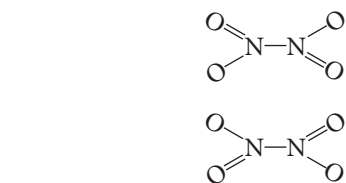
46e. Correct answer is 1300.05 bar

## Chapter 4 Text

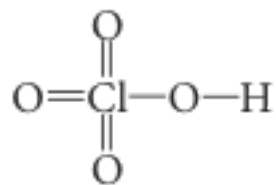
p. 104 The opening of the first paragraph should read, "The first 92 elements...are found in nature. Elements 93–118 have been synthesized in laboratories..."

## Chapter 5 Answer Key

13a. Should have a triple bond.  $\text{H}-\text{C}\equiv\text{C}-\text{Cl}$



13 o.  $\text{N}_2\text{O}_4$



13s.  $\text{HClO}_4$

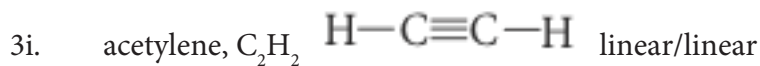
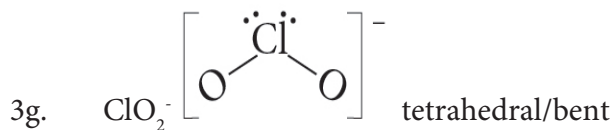
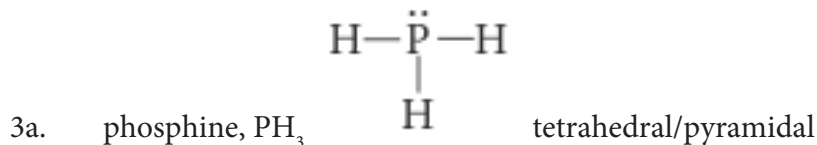
17d. perchloric acid

17f. bromous acid

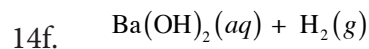
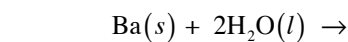
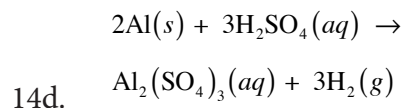
18i.  $\text{Cr}(\text{SO}_3)_3$  chromium(VI) sulfite

20a. The Be—F bond is ionic

## Chapter 6 Answer Key



### Chapter 7 Answer Key



19a. 0.029 mol HCl

19b. 0.52 g  $\text{H}_2\text{O}$

### Chapter 8 text

p. 219 The definition of the molar heat of vaporization should be “the quantity of heat required to boil or condense one mole of the substance.” (The definition is correct in the table on the same page.)

### Chapter 11 Answer Key

$$20.87 \text{ mL} \cdot \frac{1 \text{ L}}{1000 \text{ mL}} \cdot 4.077 \times 10^{-2} \text{ M} = 8.509 \times 10^{-4} \text{ mol HClO}_4$$

$\text{Ca}(\text{OH})_2$  provides two moles of  $\text{OH}^-$  ions for each mole of  $\text{Ca}(\text{OH})_2$ . So only half as many moles of  $\text{Ca}(\text{OH})_2$  are required to neutralize  $\text{HClO}_4$ .

$$\frac{8.509 \times 10^{-4} \text{ mol HClO}_4}{2} \rightarrow 4.254 \times 10^{-4} \text{ mol Ca}(\text{OH})_2$$

$$M_{\text{Ca}(\text{OH})_2} \cdot 22.94 \text{ mL} \cdot \frac{1 \text{ L}}{1000 \text{ mL}} = 4.254 \times 10^{-4} \text{ mol Ca}(\text{OH})_2$$

35c.  $M_{\text{Ca}(\text{OH})_2} = \frac{4.254 \times 10^{-4} \text{ mol Ca}(\text{OH})_2}{0.02294 \text{ L}} = 0.01855 \text{ M Ca}(\text{OH})_2$

## General Chemistry Solutions Manual

### Chapter 3

46e. Correct answer is 1300.05 bar

### Chapter 7

$$750 \text{ mg Al(OH)}_3 \cdot \frac{1 \text{ g}}{1000 \text{ mg}} \cdot \frac{\text{mol}}{78.0034 \text{ g}} = 0.00961 \text{ mol Al(OH)}_3$$

$$0.00961 \text{ mol Al(OH)}_3 \cdot \frac{3 \text{ mol HCl}}{1 \text{ mol Al(OH)}_3} = 0.0288 \text{ mol HCl}$$

19a.

Rounding this result to 2 sig digs gives 0.029 mol HCl.

$$750 \text{ mg Al(OH)}_3 \cdot \frac{1 \text{ g}}{1000 \text{ mg}} \cdot \frac{\text{mol}}{78.0034 \text{ g}} = 0.00961 \text{ mol Al(OH)}_3$$

$$0.00961 \text{ mol Al(OH)}_3 \cdot \frac{3 \text{ mol H}_2\text{O}}{1 \text{ mol Al(OH)}_3} = 0.0288 \text{ mol H}_2\text{O}$$

$$0.0288 \text{ mol H}_2\text{O} \cdot \frac{18.02 \text{ g}}{\text{mol}} = 0.5198 \text{ g H}_2\text{O}$$

19b.

After the 7-19b solution, write: Rounding this result to 2 sig digs gives 0.52 g H<sub>2</sub>O.