MULTIPLE CHOICE

## Section 1.3 Elements and the Periodic Table

1. Lithium belongs to the _._. . group of the periodic table.
a) alkali metal
b) alkaline earth
c) halogens
d) noble gases

Section 1.4 Some Characteristics of the Elements
2. Gaseous elements characterized by low reactivity are found in group _ . _ of the periodic table.
a) 5 A
b) 6 A
c) 7 A
d) 8 A

## Section 1.5 Experimentation and Measurement

3. The factor 0.000000001 corresponds to which prefix?
a) Giga
b) micro
c) nano
d) pico
4. Convert 0. 003002 to standard scientific notation.
a) $3.002 \times 10-3$
b) $3002 \times 10-\mathbf{F}$
c) $3.002 \times 103$
d) $3002 \times 10$ F

## Section 1.6 Measuring Mass

5. A student weighed $3000 \mu \mathrm{~g}$ of sulfur in the lab. This is the same mas as
a) $3.000 \times 10^{-E} \mathrm{~g}$.
b) $3.000 \times 10^{-3} \mathrm{~kg}$.
c) $3.000 \times 103 \mathrm{mg}$.
d) $3.000 \times 10 \mathrm{ng}$.

## Section 1. 12 Calculations: Converting from One Unit to Another

6. You are visiting the planet Lagmom. The money exchange rates are shown below. How many Lagmomfizzbarts will you receive in exchange for $\$ 500$ at the Lagmom Spaceport Currency Exchange counter?
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$1.00 = 10 razz 1 morb = 25 pobs
5 pobs = 1 fizzbart 5 razz = 1 tanta
1 tanta = 2 morbs
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a) $5.00 \times 10^{\mathbf{z}}$ fizzbarts
b) $1.00 \times 103 \mathrm{fizzbarts}$
c) $1.00 \times 10^{9} \mathrm{fizzbarts}$
d) $5.00 \times 105 \mathrm{fizzbarts}$

## Sections 2.3 - 2.6 Elements and Atoms

7. How many protons (p), neutrons (n), and electrons (e) are in one atom of $\frac{2}{2} \mathrm{Mg}$ ?
a) $12 \mathrm{p}, 12 \mathrm{n}, 12 \mathrm{e}$
b) $12 \mathrm{p}, 14 \mathrm{n}, 12 \mathrm{e}$
c) $12 \mathrm{p}, 26 \mathrm{n}, 10 \mathrm{e}$
d) $26 \mathrm{p}, 14 \mathrm{n}, 26 \mathrm{e}$
8. An element has two naturally occurring isotopes. One has an abundance of $37.4 \%$ and an isotopic mass of 184.953 amu, and the other has an abundance of $62.6 \%$ and a mass of 186.956 amu. What is the atomic weight of the element?
a) 185.702 amu
b) 185.954 amu
c) 186.207 amu
d) 186.956 amu

## Section 2. 10 Naming Compounds

9. What is the charge on the Cr in $\mathrm{Cr}_{\mathrm{a}} \mathrm{O}_{\mathrm{z}}$ ?
a) 2 .
b) $1+$
c) $2+$
d) $3+$
10. Li ${ }_{2}$ S is named.
a) I ithium disulfide.
b) I ithium sulfide.
c) Iithium(II) sulfide.
d) I ithium sulfur.
11. What is the formula for strontium hydroxide?
a) $\mathrm{SrH}_{2}$
b) SrOH
c) $\mathrm{SrOH}_{2}$
d) $\mathrm{Sr}(\mathrm{OH})_{2}$
12. The formula for dinitrogen trioxide is
a) $\mathrm{N}(\mathrm{OH})_{3}$
b) $\left(\mathrm{NO}_{3}\right)_{2}$
c) $\mathrm{N}_{2} \mathrm{O}_{3}$
d) $\mathrm{N}_{3} \mathrm{O}_{2}$
13. The compound $\mathrm{Cu}(\mathrm{ClO} \mathrm{z})$ i i named
a) copper chlorate(ll)
b) copper(I) chlorate
c) copper(I) chlorate(II)
d) copper(ll) chlorate
14. By analogy with the oxoanions of sulfur, $\mathrm{H}_{2} \mathrm{TeO}_{3}$ would be named
a) hydrotellurous acid
b) pertelluric acid
c) telluric acid
d) tellurous acid
15. The ions $\mathrm{ClO}_{\mathbf{4}^{-}} \mathrm{ClO}_{\mathbf{3}}{ }^{-}, \mathrm{ClO}_{\mathbf{2}^{-}}$, and $\mathrm{ClO}^{-}$are named respectively
a) hypochlorate, chlorate, chlorite, perchlorite
b) hypochlorite, chlorite, chlorate, perchlorate
c) perchlorate, chlorate, chlorite, hypochlorite
d) perchlorite, chlorite, chlorate, hypochlorate
16. $\mathrm{NO}_{2}$ is
a) nitrate.
b) nitrite.
c) nitrogen dioxide.
d) nitrogen(l।) oxide
17. $\mathrm{NO}_{2}^{-}$is the
a) nitrate ion.
b) nitrite ion.
c) nitrogen dioxide ion.
d) nitrogen(ll) oxide ion.
18. The formula for sulfurous acid is
a) $\mathrm{H}_{2} \mathrm{~S}(\mathrm{aq})$
b) $\mathrm{H}_{2} \mathrm{SO}_{2}(\mathrm{aq})$
c) $\mathrm{H}_{2} \mathrm{SO}_{4}(\mathrm{aq})$
d) $\mathrm{H}_{2} \mathrm{~S}_{2} \mathrm{O}_{7}(\mathrm{aq})$
19. The thiosulfate ion is
a) $\mathrm{HS}^{-}$
b) $\mathrm{HSO}_{4}=-$
c) $\mathrm{SO}_{5} 2-$
d) $\mathrm{S}_{2} \mathrm{O}_{2}{ }^{2-}$

## Section 3.1 Balancing Chemical Equations

20. What is the coefficient for oxygen when the following equation is balanced using the I owest, whole numbered coefficients?
$\ldots \mathrm{C}_{2} \mathrm{H}_{8} \mathrm{O}(\mathrm{g})+\ldots \mathrm{O}_{2}(\mathrm{~g}) \longrightarrow \ldots \mathrm{CO}_{2}(\mathrm{~g})+\ldots \mathrm{H}_{2} \mathrm{O}(\mathrm{g})$
a) 3
b) 5
c) 7
d) 9
21. What is the sum of the coefficients when the following equation is balanced using the lowest, whole numbered coefficients?

a) $\overline{10}$
b) 12
c) 19
d) 22
22. Calcium phosphate reacts with sulfuric acid to form calcium sulfate and phosphoric acid. What is the coefficient for sulfuric acid when the equation is balanced using the lowest, whole-numbered coefficients?
a) 1
b) 2
c) 3
d) none of these

## Section 3. 3 Avogadro's Number and the Mole

23. How many grams are there in 0.500 mol of dichlorodifluoromethane, $\mathrm{CF}_{2} \mathrm{Cl}_{2}$ ?
a) $4.14 \times 10^{-3} \mathrm{~g}$
b) 60.5 g
c) 121 g
d) 242 g
24. How many moles are there in 1.50 g of ethanol, $\mathrm{CH}_{2} \mathrm{CH}_{2} \mathrm{OH}$ ?
a) 0.0145 mol
b) 0.0326 mol
c) 30.7 mol
d) 69.0 mol
25. What is the molar mass of butane if 5. $19 \times 10^{\mathbf{1 E}}$ molecules weighs 5.00 $\boldsymbol{\mu}$ ? ?
a) $58.0 \mathrm{~g} / \mathrm{mol}$
b) $172 \mathrm{~g} / \mathrm{mol}$
c) $232 \mathrm{~g} / \mathrm{mol}$
d) $431 \mathrm{~g} / \mathrm{mol}$

## Section 3.4 Stoichiometry: Chemical Arithmetic

26. How many moles of CuO are produced from 0.450 mol of Cuso in the following reaction? $2 \mathrm{Cu}_{2} \mathrm{O}(\mathrm{s})+\mathrm{O}_{2}(\mathrm{~g}) \longrightarrow 4 \mathrm{CuO}(\mathrm{s})$
a) 0.225 mol
b) 0.450 mol
c) 0.900 mol
d) 4.44 mol
27. How many grams of calcium chloride are needed to produce 10.0 g of potassium chloride?

$$
\mathrm{CaCl}_{2}(\mathrm{aq})+\mathrm{K}_{2} \mathrm{CO}_{3}(\mathrm{aq}) \longrightarrow 2 \mathrm{KCl}(\mathrm{aq})+\mathrm{CaCO}_{3}(\mathrm{~s})
$$

a) 3.36 g
b) 7.44 g
c) 14.9 g
d) 29.8 g

## Section 3.6 Reactions with Limiting Amounts of Reactants

28. Which substance is the limiting reagent when 2.0 g of sulfur reacts with 3.0 g of oxygen and 4.0 g of sodium hydroxide according to the following reaction: $2 \mathrm{~S}(\mathrm{~s})+3 \mathrm{O}_{2}(\mathrm{~g})+4 \mathrm{NaOH}(\mathrm{aq}) \longrightarrow 2 \mathrm{Na}_{2} \mathrm{SO}_{4}(\mathrm{aq})+2 \mathrm{H}_{2} \mathrm{O}(\mathrm{l})$
a) $S$
b) $\mathrm{O}_{2}$
c) NaOH
d) all react equally
29. How many grams of the excess reagent are left over when 6.00 g of CSa gas react with 10.0 g of Cla gas in the following reaction: $\mathrm{CS}_{2}(\mathrm{~g})+3 \mathrm{Cl}_{2}(\mathrm{~g}) \longrightarrow \mathrm{CCl}_{4}(\mathrm{l})+\mathrm{S}_{2} \mathrm{Cl}_{2}(\mathrm{l})$
a) 2.42 g
b) 2.77 g
c) 3.58 g
d) 4.00 g

Section 3. 7 Concentrations of Reactants in Solution: Molarity
30. What is the concentration when 10.0 g of $\mathrm{FeCl} z$ is dissolved in enough water to make 275 mL of solution?
a) $2.24 \times 10^{-4} \mathrm{M}$
b) 0.224 M
c) 4.46 M
d) $4.46 \times 103 \mathrm{M}$
31. How many grams of $\mathrm{AgNO}_{3}$ are needed to make 250 . mL of a solution that is 0.135 M ?
a) 1.99 g
b) 3.15 g
c) 5.73 g
d) 9.17 g

1. a)

Chapter: 1 QUESTION: 10
2. d)
Chapter: 1 QUESTION: 22
3. c)

Chapter: 1 QUESTION: 28

Chapter: 1 QUESTION: 30

Chapter: 1 QUESTION: 39

Chapter: 1 QUESTION: 67
7. b)
8. C)
9. d)
10. b)
11. d) periodic table required
12. c)
13. d)
14. d)
15. c)
16. C)
17. b)

Chapter: 2 QUESTION: 24

Chapter: 2 QUESTION: 26

Chapter: 2 QUESTION: 63

Chapter: 2 QUESTION: 64

Chapter: 2 QUESTION: 65

Chapter: 2 QUESTION: 68

Chapter: 2 QUESTION: 71

Chapter: 2 QUESTION: 72

Chapter: 2 QUESTION: 73

Chapter: 2 QUESTION: 74

Chapter: 2 QUESTION: 75
18. b) periodic table suggested
Chapter: 2 QUESTION: 76
19. d)
Chapter: 2 QUESTION: 78
20. d)

Chapter: 3 QUESTION: 3
21. c)

Chapter: 3 QUESTION: 4
22. c)

Chapter: 3 QUESTION: 7
23. b)

Chapter: 3 QUESTION: 15
24. b)

Chapter: 3 QUESTION: 16
25. a)
26. C)
27. b)
28. C)
29. a)

Chapter: 3 QUESTION: 42

Chapter: 3 QUESTION: 44
30. b)

Chapter: 3 QUESTION: 49
31. c)

