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) 5A
   b) 6A
   c) 7A
   d) 8A

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 x 10⁻³
   b) 3002 x 10⁻⁶
   c) 3.002 x 10⁻³
   d) 3002 x 10⁻⁶

Section 1.6 Measuring Mass

5. A student weighed 3000 μg of sulfur in the lab. This is the same mass as
   a) 3.000 x 10⁻⁶ g.
   b) 3.000 x 10⁻⁶ kg.
   c) 3.000 x 10³ mg.
   d) 3.000 x 10⁵ 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 Lagmom fizzbarts will you receive in exchange for $500 at the Lagmom Spaceport Currency Exchange counter?

$1.00 = 10 razz
5 pobs = 1 fizzbart
1 tanta = 2 morbs
1 morb = 25 pobs
5 razz = 1 tanta

a) 5.00 x 10^2 fizzbarts
b) 1.00 x 10^2 fizzbarts
c) 1.00 x 10^4 fizzbarts
d) 5.00 x 10^5 fizzbarts

Sections 2.3 - 2.6 Elements and Atoms

7. How many protons (p), neutrons (n), and electrons (e) are in one atom of ^25\text{Mg}?

a) 12 p, 12 n, 12 e
b) 12 p, 14 n, 12 e
c) 12 p, 26 n, 10 e
d) 26 p, 14 n, 26 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 Cr_2O_5?

a) 2-
b) 1+
c) 2+
d) 3+

10. Li_2S is named.

a) lithium disulfide.
b) lithium sulfide.
c) lithium(II) sulfide.
d) lithium sulfur.

11. What is the formula for strontium hydroxide?

a) SrH_2
b) SrOH
c) SrOH_2
d) Sr(OH)_2
12. The formula for dinitrogen trioxide is
   a) N(OH)$_2$
   b) (NO$_2$)$_2$
   c) N$_2$O$_3$
   d) N$_2$O$_2$

13. The compound Cu(ClO$_2$)$_2$ is named
   a) copper chlorate(II)
   b) copper(I) chlorate
   c) copper(II) chlorate(II)
   d) copper(II) chlorate

14. By analogy with the oxoanions of sulfur, H$_2$TeO$_3$ would be named
   a) hydrotelluric acid
   b) pertelluric acid
   c) telluric acid
   d) tellurous acid

15. The ions ClO$_4^-$, ClO$_3^-$, ClO$_2^-$, and ClO$^-$ are named respectively
   a) hypochlorate, chlorate, chlorite, perchlorite
   b) hypochlorite, chlorite, chlorate, perchlorate
   c) perchlorate, chlorate, chlorite, hypochlorite
   d) perchlorate, chlorite, chlorate, hypochlorite

16. NO$_2$ is
   a) nitrate.
   b) nitrite.
   c) nitrogen dioxide.
   d) nitrogen(II) oxide.

17. NO$_2^-$ is the
   a) nitrate ion.
   b) nitrite ion.
   c) nitrogen dioxide ion.
   d) nitrogen(II) oxide ion.

18. The formula for sulfurous acid is
   a) H$_2$S(aq)
   b) H$_2$SO$_2$(aq)
   c) H$_2$SO$_4$(aq)
   d) H$_2$SO$_7$(aq)

19. The thiosulfate ion is
   a) HS$^-$
   b) HSO$_3^-$
   c) SO$_4^{2-}$
   d) S$_2$O$_3^{2-}$
**Section 3.1 Balancing Chemical Equations**

20. What is the coefficient for oxygen when the following equation is balanced using the lowest, whole numbered coefficients?

\[ \text{C}_3\text{H}_8\text{O}(g) + \_\_\_ \text{O}_2(g) \rightarrow \_\_\_ \text{CO}_2(g) + \_\_\_ \text{H}_2\text{O}(g) \]

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?

\[ \text{P}_{\_\_\_}\text{H}_2\text{O}(g) + \_\_\_ \text{O}_2(g) \rightarrow \_\_\_ \text{P}_4\text{O}_{_\_\_}\text{O}(s) + \_\_\_ \text{H}_2\text{O}(g) \]

a) 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, CF₂Cl₂?

a) 4.14 x 10⁻² g  
   b) 60.5 g  
   c) 121 g  
   d) 242 g

24. How many moles are there in 1.50 g of ethanol, CH₃CH₂OH?

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 x 10⁻³ molecules weighs 5.00 g?

a) 58.0 g/mol  
   b) 172 g/mol  
   c) 232 g/mol  
   d) 431 g/mol

**Section 3.4 Stoichiometry: Chemical Arithmetic**

26. How many moles of CuO are produced from 0.450 mol of Cu₂O in the following reaction?

\[ 2 \text{Cu}_2\text{O}(s) + \text{O}_2(g) \rightarrow 4 \text{CuO}(s) \]

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?

\[ \text{CaCl}_2(aq) + \text{K}_2\text{CO}_3(aq) \rightarrow 2 \text{KCl}(aq) + \text{CaCO}_3(s) \]

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:

\[ 2 \text{S(s)} + 3 \text{O}_2(g) + 4 \text{NaOH}(aq) \rightarrow 2 \text{Na}_2\text{SO}_4(aq) + 2 \text{H}_2\text{O}(l) \]

a) S  
b) O\(_2\)  
c) NaOH  
d) all react equally

29. How many grams of the excess reagent are left over when 6.00 g of CS\(_2\) gas react with 10.0 g of Cl\(_2\) gas in the following reaction:

\[ \text{CS}_2(g) + 3 \text{Cl}_2(g) \rightarrow \text{CCl}_4(l) + \text{S}_2\text{Cl}_2(l) \]

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 FeCl\(_3\) is dissolved in enough water to make 275 mL of solution?

a) \(2.24 \times 10^{-2}\) M  
b) 0.224 M  
c) 4.46 M  
d) \(4.46 \times 10^2\) M

31. How many grams of 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
ANSWER KEY FOR TEST UNTITLED

1. a) Chapter: 1 QUESTION: 10

2. d) Chapter: 1 QUESTION: 22

3. c) Chapter: 1 QUESTION: 28

4. a) Chapter: 1 QUESTION: 30

5. d) Chapter: 1 QUESTION: 39

6. c) Chapter: 1 QUESTION: 67

7. b) Chapter: 2 QUESTION: 24

8. c) Chapter: 2 QUESTION: 26

9. d) Chapter: 2 QUESTION: 63

10. b) Chapter: 2 QUESTION: 64

11. d) periodic table required Chapter: 2 QUESTION: 65

12. c) Chapter: 2 QUESTION: 68

13. d) Chapter: 2 QUESTION: 71

14. d) Chapter: 2 QUESTION: 72

15. c) Chapter: 2 QUESTION: 73

16. c) Chapter: 2 QUESTION: 74

17. b) Chapter: 2 QUESTION: 75
ANSWER KEY FOR TEST UNTITLED

18. b) periodic table suggested

19. d)

20. d)

21. c)

22. c)

23. b)

24. b)

25. a)

26. c)

27. b)

28. c)

29. a)

30. b)

31. c)

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