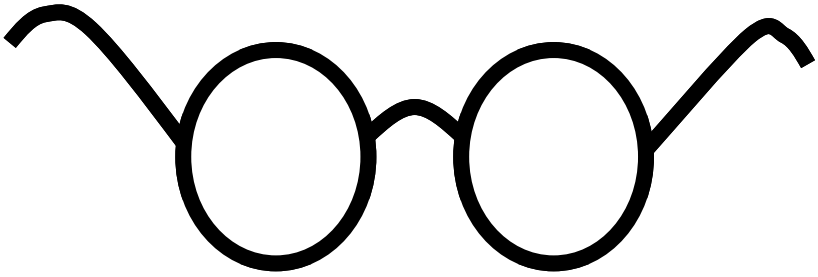
Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Practice Test Chapter 12

Multiple Choice

**You need your own calculator for the test. You will not be able to borrow from your teacher. There will be blast from the past questions. Help is always available during tutorials.*



____ 1. H_2O_2, hydrogen peroxide, naturally breaks down into H_2O over time. MnO_2,manganese dioxide, can be used to lower the energy of activation needed for this reaction to take place and, thus, increase the rate of reaction. What type of substance is MnO_2 ?

a. an inhibitor
b. a catalyst
c. a product
d. a reactant

____ 2. $C_3H_8 + O_2 \longrightarrow CO_2 + H_2O$

This chemical equation represents the combustion of propane. When correctly balanced, the coefficient for water is

a. 2
b. 4
c. 8
d. 16

____ 3. $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$

In this reaction, how many grams of Fe_2O_3 are required to completely react with 84 grams of CO?

a. 64
b. 80
c. 160
d. 1400

____ 4. $Mg_3N_{2(s)} + 6H_2O_{(l)} \rightarrow$

$2NH_{3(aq)} + 3Mg(OH)_{2(s)}$

If 54.0 grams of water are mixed with excess magnesium nitride, then how many grams of ammonia are produced?

a. 1.00 grams
b. 17.0 grams
c. 51.0 grams
d. 153 grams

____ 5. $3CuCl_2 + 2Al \longrightarrow 2AlCl_3 + 3Cu$

A mass of 5.4 grams of aluminum (Al) reacts with an excess of copper (II) chloride ($CuCl_2$) in solution, as shown above. What mass of solid copper (Cu) is produced?

a. 28 grams
b. 8.5 grams
c. 38 grams
d. 19 grams

____ 6. What is the density of 1 mole of NO_2 gas at STP?

a. 2.05 g/L
b. 1.34 g/L
c. 1.03 g/L
d. 0.513 g/L

____ 7. What type of reaction is the reaction below?

__ Fe_2O_3 → __ Fe + __ O_2

a. Synthesis/Combination
b. Decomposition
c. Combustion
d. Single Replacement

____ 8. What type of reaction is the reaction below?

__ Al + __ $CuSO_4$ → __ $Al_2(SO_4)_3$ + __Cu

a. Synthesis/Combination
b. Decomposition
c. Double Replacement
d. Single Replacement

____ 9. Select the set of coefficients that properly balance the equation below.

__ $Pb(NO_3)_2$ + __ NH_4Cl → __ $PbCl_2$ + __ NH_4NO_3

a. 1, 2, 1, 2
b. 1, 2, 2, 1
c. 2, 1, 2, 1
d. 1, 2, 2, 2

____ 10. Which of the following is a correct interpretation of this balanced equation?

$2KClO_3 \rightarrow 2KCl + 3\ O_2$

a. Two molecules of potassium chlorate produce two molecules of potassium chloride and three molecules of oxygen.
b. Two formula units of potassium chlorate produce two formula units of potassium chloride and three molecules of oxygen.
c. Two formula units of potassium chlorite produce two formula units of potassium chloride and three molecules of oxygen.
d. Two formula units of potassium chlorate produce two formula units of potassium chloride and two **molecules of oxygen.**

____ 11. This is the Reaction that occurs when an airbag goes off.

$2\ NaN_{3(s)} \rightarrow 2Na_{(s)} + 3\ N_{2(g)}$

If an airbag has 100 grams of sodium azide (NaN_3), how many liters of nitrogen gas are produced? Assume STP

a. 67.2L
b. 22.4L
c. 51.7L
d. 5.8L

____ 12. $2CaCO_3 + 2SO_2 + O_2 \rightarrow 2CaSO_4 + 2CO_2$

If the above reaction has a 96.8% yield, how many actual grams of $CaSO_4$ are recovered when 5.24g of SO_2 are used in the presence of excess $CaCO_3$ and O_2?

a. 10.77g $CaSO_4$
b. 11.13 g $CaSO_4$
c. 10.00 g $CaSO_4$
d. 9.36 g $CaSO_4$

____ 13. $Mg + 2\ HCl \rightarrow MgCl_2 + H_2$
At STP, what is the total number of liters of hydrogen gas produced when 3.00 moles of hydrochloric acid solution is completely consumed?
a. 11.2L
b. 22.4 L
c. 33.6 L
d. 44.8 L

____ 14. Which of these expressions is a correct interpretation of the balanced equation?
$2S + 3\ O_2 \text{ --> } 2\ SO_3$
a. 2 moles of S + 3 moles of oxygen --> 2 moles of SO_3
b. 2 atoms of S + 6 molecules of oxygen --> 2 molecules of SO_3
c. 2 g of S + 3 g of O_2 --> 2 g of SO_3
d. None of the above

____ 15. How many moles of water are needed to react with 8.4 mol of NO_2?
___ NO_2 + ___H_2O --> ___NO + ___HNO_3
a. 2.8 moles
b. 3.0 moles
c. 8.4 moles
d. 25 moles

____ 16. How many liters of NH_3, at STP, will react with 5.3 g O_2 to form NO_2 and water?
$4NH_3(g) + 7O_2(g) \rightarrow 4NO_2 + 6H_2O(g)$
a. 0.004 23 L
b. 2.12 L
c. 3.03 L
d. 6.49 L

____ 17. What is one item that is NOT conserved in the reaction shown below?
$N_2(g) + 3F_2(g) \rightarrow 2NF_3(g)$
a. molecules only
b. mass only
c. mass and molecules only
d. moles and atoms only

____ 18. Lead nitrate can be decomposed by heating. What is the percent yield of the decomposition reaction if 9.9 g $Pb(NO_3)_2$ are heated to give 5.5 g of PbO?
$2Pb(NO_3)_2(s) \rightarrow 2PbO(s) + 4NO_2(g) + O_2(g)$
a. 44%
b. 56%
c. 67%
d. 82%

____ 19. Aluminum reacts with sulfuric acid to produce aluminum sulfate and hydrogen gas. How many grams of aluminum sulfate would be formed if 250 g H_2SO_4 completely reacted with aluminum?
$2Al(s) + 3H_2SO_4(aq) \rightarrow Al_2(SO_4)_3(aq) + 3H_2(g)$
a. 0.85 g
b. 290 g
c. 450 g
d. 870 g

____ 20. What is <u>conserved</u> in the reaction shown below?
$N_2(g) + 3F_2(g) \rightarrow 2NF_3(g)$
a. only mass and atoms
b. only moles
c. only mass
d. only mass, atoms, moles, and molecules
e. only moles and molecules

____ 21. Calculate the percent yield if 13.1 g of CaO is actually produced when 24.8 g of $CaCO_3$ is heated?
$CaCO_3$ --> CaO + CO_2
a. 13.9
b. 10.6
c. 90.1
d. 94.2

____ 22. Where can you find the numbers for the mole ratio?
a. On the periodic table
b. From the coefficients on a balanced equation
c. from the molar masses.
d. From the molar volumes

____ 23. Which compound represents a molecular compound?
a. S_2Br_6
b. KF
c. HBr
d. $NaNO_3$

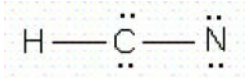
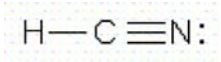
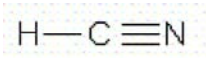
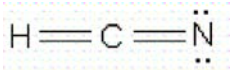
____ 24. Which compound represents an ionic compound?
a. SF_6
b. $NaHCO_3$
c. F_2
d. CH_4

____ 25. How many moles of chlorine gas are contained in 9.03×10^{23} molecules?
a. 9.03 moles
b. 6.02 moles
c. 2.0 moles
d. 1.5 moles

____ 26. What is the correct order of the following bonds in terms of decreasing polarity?

a. As-Cl, N-Cl, P-Cl
b. As-Cl, P-Cl, N-Cl
c. P-Cl, As-Cl, N-Cl
d. P-Cl, N-Cl, As-Cl

____ 27. Which of the following is a correct Lewis structure for hydrogen cyanide, HCN?

a. 
b. 
c. 
d. 

____ 28. Choose the correct electron configuration for phosphide ion.
a. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2$
b. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6$
c. $1s^2\ 2s^2\ 2p^6\ 3s^2$
d. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^3$

____ 29. What is the polarity of $CHCl_3$?
a. nonpolar
b. ionic
c. polar

____ 30. How many valence electrons are in an atom of magnesium?
a. 2
b. 5
c. 4
d. 3

____ 31. Put the elements in period 2 on the periodic table in order of increasing ionization energy.
a. Li, Be, B, C, N, O, F, Ne
b. Ne, F, O, N, C, B, Be, Li

____ 32.

Table of Common Molecules				
Name	**Hydrogen**	**Chlorine**	**Ammonia**	**Methane**
Molecular Formula	H_2	Cl_2	NH_3	CH_4

What type of bond do all of these compounds have in common?
a. covalent
b. ionic
c. hydrogen
d. metallic

____ 33. Which force holds together a Calcium Chloride compound?
a. intramolecular
b. intermolecular
c. electrostatic
d. electronegativity

____ 34. Convert $7.40x10^3$ g to kg.
a. 7.40 kg
b. $7.40x10^1$ kg
c. $7.40x10^2$ kg
d. $7.40x10^6$ kg

____ 35. Convert 38^0C to Kelvin.
a. 273 K
b. 311 K
c. 235 K
d. 0 K

____ 36. The correct molar mass of molecular Iodine gas is _____.
a. 126.9
b. 253.8
c. 254.0
d. 127.0

____ 37. The element At could be classified as which of the following?
a. transition metal
b. noble gas
c. alkali metal
d. halogen

____ 38. What is the measurement 1042 L rounded off to two significant digits?
a. 1.0×10^3 L
b. 1040 L
c. 1050 L
d. 1.1×10^3 L

____ 39. What are the missing coefficients for the skeleton equation below?
$Cr(s) + Fe(NO_3)_2(aq) \rightarrow Fe(s) + Cr(NO_3)_3(aq)$
a. 4, 6, 6, 2
b. 2, 3, 2, 3
c. 2, 3, 3, 2
d. 1, 3, 3, 1

____ 40. Iron has a density of 7.86 g/cm^3. The volume occupied by 55.85 g of iron is
a. 0.141 cm^3
b. 7.11 cm^3
c. 2.8 cm^3
d. 439 cm^3

Multiple Response
Identify one or more choices that best complete the statement or answer the question.

____ 41. What intermolecular forces are present between molecules of HCN?
a. Hydrogen Bonding
b. Dispersion
c. Dipole-Dipole
d. Ionic Bonding

____ 42. What intermolecular forces are present in CH_3OH?
a. Dispersion
b. Hydrogen Bonding
c. Ionic Bonding
d. Dipole-Dipole

Practice Test Chapter 12
Answer Section

MULTIPLE CHOICE

1. ANS: B PTS: 1 STA: 8c
2. ANS: B PTS: 1
3. ANS: C PTS: 1 STA: 3e
4. ANS: B PTS: 1 STA: 3e
5. ANS: D PTS: 1 STA: 3e
6. ANS: A PTS: 1 STA: 3d
   KEY: density of a gas at STP; molar mass; molar volume
7. ANS: B PTS: 1 STA: 3a KEY: Types of Reactions; Decomposition
8. ANS: D PTS: 1 STA: 3a
   KEY: Types of Reactions; Single Replacement
9. ANS: A PTS: 1 STA: 3a KEY: Balancing Equations
10. ANS: C
    ST 3

    PTS: 1
11. ANS: C
    ST 3

    PTS: 1
12. ANS: A
    ST. 3

    PTS: 1
13. ANS: C
    ST 3

    PTS: 1
14. ANS: A PTS: 1
15. ANS: A PTS: 1 STA: 3d KEY: Mass to Moles
16. ANS: B PTS: 1 DIF: L2 REF: p. 371
    OBJ: 12.3.1 STA: Ch.3.d
17. ANS: A PTS: 1
18. ANS: D PTS: 1 DIF: L2 REF: p. 375
    OBJ: 12.3.2 STA: Ch.3.f
19. ANS: B PTS: 1 DIF: L2 REF: p. 360 | p. 361 | p. 362
    OBJ: 12.2.2 STA: Ch.3.d
20. ANS: A PTS: 1
21. ANS: D PTS: 1 STA: 3d KEY: molar mass(GFM) from name
22. ANS: B
    3

    PTS: 1

23. ANS: A
ST 2A, 2B

PTS: 1

24. ANS: B PTS: 1 DIF: 2 STA: 2a
KEY: Ionic Compound Recognition

25. ANS: D PTS: 1 STA: 3d KEY: Representative Particles to Moles

26. ANS: B PTS: 1

27. ANS: B PTS: 1

28. ANS: B PTS: 1

29. ANS: C PTS: 1

30. ANS: A PTS: 1 DIF: L1 REF: p. 188
OBJ: 7.1.1 STA: Ch.1.c | Ch.2.a | Ch.1.d

31. ANS: A PTS: 1

32. ANS: A
ST 2B

PTS: 1

33. ANS: C PTS: 1

34. ANS: A PTS: 1

35. ANS: B PTS: 1

36. ANS: B PTS: 1

37. ANS: D
ST. 1.B

PTS: 1

38. ANS: A PTS: 1 DIF: L2 REF: p. 66 | p. 68
OBJ: 3.1.3

39. ANS: C PTS: 1 DIF: L2 REF: p. 324 | p. 325
OBJ: 11.1.3 STA: Ch.3.a | Ch.3.e

40. ANS: B PTS: 1 DIF: Easy REF: Section: 1.7
OBJ: EK.1.A.2

MULTIPLE RESPONSE

41. ANS: B, C PTS: 1

42. ANS: A, B, D PTS: 1