

Use your Scantron to answer questions 1-33. Each answer is worth 2 pt. There is only one answer per question unless it states otherwise.

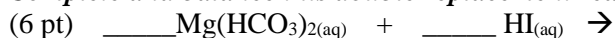
Chp 5 (Chemical Reactions, Equations and Stoichiometry)

1. Indicate the missing words in the following statement: "For an ordinary chemical reaction the mass of the products is _____ the mass of the reactants."
A) usually more than B) always less than C) usually less than D) always equal to
2. Which of the following elements is represented by a diatomic molecule in a chemical equation?
A) beryllium B) boron C) chlorine D) krypton E) phosphorous

Use the answers on the right to answer Questions 3-7

3. In chemical equations the _____ appear on the left side of the equation.	A) Created
4. Chemical equations represent a process in which one or more pure substances is _____ other pure substances.	B) Coefficients
5. Chemical equations are balanced by adding _____ to the equations.	C) Converted into
6. In chemical reactions atoms are neither _____ nor destroyed they only change partners.	D) Reactant(s)
7. When the product of a reaction is a precipitate the subscript _____ is used in the formula.	E) Product(s)
	AB) Chemical bond
	AD) Coefficients
	AE) (g)
	BC) (l)
	CD) (s)

Complete and balance this double replacement reaction.



Answers for Questions #8-10

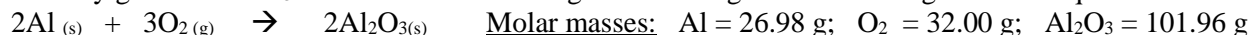
- A) Double displacement B) Single displacement C) Combination reaction D) Decomposition reaction E) Combustion

8. Type _____ (3 pt) **Balance:** _____ $\text{HgO}_{(\text{s})} \rightarrow$ _____ Hg + _____ O_2
9. Type _____ (4 pt) **Balance:** _____ $\text{Cu}_{(\text{s})} +$ _____ $\text{AgNO}_{3(\text{aq})} \rightarrow$ _____ $\text{Ag}_{(\text{s})} +$ _____ $\text{Cu}(\text{NO}_3)_{2(\text{aq})}$
10. Type _____ (5 pt) **Write & balance:** Nitrogen gas and hydrogen gas react together to make ammonia gas.

(7 pt) Write the balanced equation for the combustion of acetylene (C_2H_2).

11. Which of the following is considered a greenhouse gas?
A) H₂ B) N₂ C) O₂ D) CO₂ E) H₂O
12. What is the **molar mass** of the compound, aluminum chloride?
A) 26.98 amu B) 26.98 g C) 62.43 g D) 133.33 amu E) 133.33 g
13. For the reaction $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$ how many moles of water is produced from 2.5 moles of hydrogen?
a. 2.5 moles b. 2.0 moles c. 18.0 grams d. 2.5 grams
14. How many moles of CO₂ are produced from 79.8 g of Fe₂O₃ according to the following balanced equation?
 $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$ Molar masses: Fe₂O₃ = 159.70 g; CO = 28.01 g; Fe = 55.85 g; CO₂ = 44.01 g
A) 2.56 mol CO₂ B) 1.36 mole CO₂ C) 1.50 mole CO₂ D) 1.14 mole CO₂ E) 1.62 mol CO₂

(8 pt) How many grams of AlCl₃ can be made from 55 kg Al according to the following balanced equation:



Chp 6 (Acids, Bases, Salts)

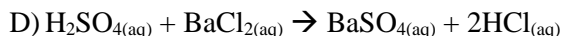
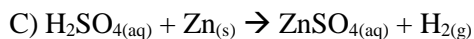
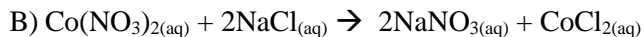
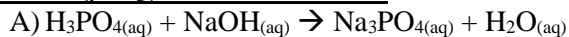
15. What kind of taste do acids have?
A) sweet B) sour C) fruity D) slippery E) salty

Use these answers for questions 16-18: A) acid(s) B) base(s) C) neutral D) acidic E) basic

16. _____ are compounds that donate a H⁺ in water.
17. Ammonia is a weaker _____ than sodium hydroxide
18. HCl is the _____ found in our stomachs.

Use these answers for Questions 19-20. Mark two answers on your scantron for each question.

- A) strong B) weak C) acid D) base
19. NaOH is a _____ .
20. H₂CO₃ is a _____ .

Answers for Questions 21 and 22.

21. Which of the reactions is an acid base neutralization reaction?

22. Which of the reactions produces an acid?

Use these answers for questions 23-27

A) aqueous B) electrolyte C) neutral D) acidic E) basic

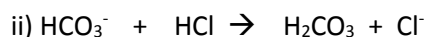
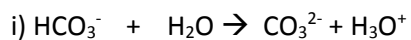
23. In _____ solutions the pH is equal to 7.

24. A solution of pH 8 is more _____ than a solution of pH 5.

25. In _____ solutions the pH is less than 7

26. In _____ solutions $[\text{OH}^-]$ is less than $[\text{H}_3\text{O}^+]$.27. A solution that contains $[\text{H}_3\text{O}^+] = 1.2 \times 10^{-8}$ is _____.Use the following equations for Questions 28 and 29. $\text{pH} = -\log[\text{H}_3\text{O}^+]$ and $[\text{H}_3\text{O}^+] = 10^{-\text{pH}}$ 28. What is the pH of a solution that has a $[\text{H}_3\text{O}^+] = 1.2 \times 10^{-3}$?

A) 1.20 B) 2.92 C) 11.08 D) 12.80

29. What is the $[\text{H}_3\text{O}^+]$ concentration in a solution that has a $\text{pH} = 2.34$?A) $2.3 \times 10^{-3} \text{ M}$ B) $4.6 \times 10^{-3} \text{ M}$ C) $2.2 \times 10^{-12} \text{ M}$ D) $1.2 \times 10^1 \text{ M}$ For Questions 30 - 32 consider the following reactions for HCO_3^- 30. In equation i), HCO_3^- is a(an) A) Acid B) Base C) both D) neither31. In equation ii), HCO_3^- is a(an) A) Acid B) Base C) both D) neither32. Substances like HCO_3^- are known as A) amphiphatic B) amphoteric C) esoteric D) hyperbaric

33. Buffers are substances that are A) solids B) liquids C) aqueous D) resist pH changes in aqueous solutions.

(22 pt) Fill in the correct name or the correct formula for the compounds listed in the following table.

COMPOUND FORMULA	ION FORMULA	ION FORMULA	COMPOUND NAME
Ca(NO ₃) ₂			
	K ⁺	ClO ₃ ⁻	
	Sn ²⁺	CO ₃ ²⁻	
KMnO ₄			
FeSO ₃			
			ammonium sulfate
	-----	-----	carbon dioxide
			Phosphoric acid
	H ⁺	ClO ⁻	

22 pt

PERIODIC CHART OF THE ELEMENTS

1 H 1.00797																	1 H 1.00797	2 He 4.0026					
3 Li 6.939	4 Be 9.0122																	5 B 10.811	6 C 12.0112	7 N 14.0067	8 O 15.9994	9 F 18.9984	10 Ne 20.183
11 Na 22.9898	12 Mg 24.312																	13 Al 26.9815	14 Si 28.086	15 P 30.9738	16 S 32.064	17 Cl 35.453	18 Ar 39.948
19 K 39.102	20 Ca 40.08	21 Sc 44.956	22 Ti 47.90	23 V 50.942	24 Cr 51.996	25 Mn 54.9380	26 Fe 55.847	27 Co 58.9332	28 Ni 58.71	29 Cu 63.54	30 Zn 65.37	31 Ga 69.72	32 Ge 72.59	33 As 74.9216	34 Se 78.96	35 Br 79.909	36 Kr 83.80						
37 Rb 85.47	38 Sr 87.62	39 Y 88.905	40 Zr 91.22	41 Nb 92.906	42 Mo 95.94	43 Tc (99)	44 Ru 101.07	45 Rh 102.905	46 Pd 106.4	47 Ag 107.870	48 Cd 112.40	49 In 114.82	50 Sn 118.69	51 Sb 121.75	52 Te 127.60	53 I 126.904	54 Xe 131.30						
55 Cs 132.905	56 Ba 137.34	*57 La 138.91	72 Hf 178.49	73 Ta 180.948	74 W 183.85	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.09	79 Au 196.967	80 Hg 200.59	81 Tl 204.37	82 Pb 207.19	83 Bi 208.980	84 Po (210)	85 At (210)	86 Rn (222)						
87 Fr (223)	88 Ra (226)	†89 Ac (227)	104 Rf (261)	105 Db (262)	106 Sg (266)	107 Bh (262)	108 Hs (265)	109 Mt (266)	110 ? (271)	111 ? (272)	112 ? (277)												

Numbers in parenthesis are mass numbers of most stable or most common isotope.

Atomic weights corrected to conform to the 1963 values of the Commission on Atomic Weights.

The group designations used here are the former Chemical Abstract Service numbers.

* Lanthanide Series

58 Ce 140.12	59 Pr 140.907	60 Nd 144.24	61 Pm (147)	62 Sm 150.35	63 Eu 151.96	64 Gd 157.25	65 Tb 158.924	66 Dy 162.50	67 Ho 164.930	68 Er 167.26	69 Tm 168.934	70 Yb 173.04	71 Lu 174.97
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† Actinide Series

90 Th 232.038	91 Pa (231)	92 U 238.03	93 Np (237)	94 Pu (242)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (249)	99 Es (254)	100 Fm (253)	101 Md (256)	102 No (256)	103 Lr (257)
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SCRATCH PAPER