Chemistry 11 Chemical Reactions

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Name KE Date

Hease answer all questions on the test provided. Answers to questions involving calculations should be placed in the bottom right hand corner and they should be underlined.

Objective 1: Balancing Chemical Reactions (8 marks) Balance the following (include states):

 $1.3 \text{NaOH}_{(aq)} + \text{H}_3 \text{PO}_{4} \rightarrow \text{Na}_3 \text{PO}_{4} + \text{H}_2 \text{O}_{(4)}$

2. A copper(II) chloride solution reacts with solid iron to produce an iron (III) chloride solution and solid copper.

3 Cu Cl2 (au) + 2Fe(s) -> 2Fe Cl3 (ag) + 3 (u (s) (2)

3. $2C_3H_7OH_+ O_{2_{(g)}} \rightarrow H_2O_+ CO_{2_{(g)}}$

Nitrogen gas and oxygen gas and energy react to produce dinitrogen trioxide.

 $2N_{2(g)} + 30_{2(g)} + energy \rightarrow 2N_{2}O_{3(g)}(2)$

5. 2Al_(s)+3Cl_{2(q)}>2AlCl_{3(s)}

6. Aluminum sulphate reacts with sodium hydroxide to produce heat, solid aluminum hydroxide, and sodium sulphate?

A12(504)3+6NaOH -> Energy +2A1(6H)3+3Na2SOy
(ag)

Objective 2: Classifying reactions (8 marks)

1. Classify the 6 reactions on the previous page (3 marks)
1. Neutralization
2. Single Replacement
3. Combustion
4. Synthesis
5. Synthesis
6. Double Replacement
2. Use the reactivity table to complete question 2. Look at the four reactions below. According to the activity series which reaction(s) will
occur?(1 mark)
$3Cu(s) + 2AlCl_{3(aq)} -> 3CuCl_{2(aq)} + 2Al(s)$ $\Rightarrow Zn(s) + Fe(NO_3)_{2(aq)} -> Zn(NO_3)_{2(aq)} + Fe(s)$ $* Could be more those$
\rightarrow \mathbb{R} $Zn(s) + Fe(NO_3)_2(aq) -> Zn(NO_3)_2(aq) + Fe(s) \downarrow then one choice$
$Zn(s) + 2NaCl(aq) \rightarrow ZnCl_{2(aq)} + 2Na(s)$
D. Ca(s) + Sn(OH)2(aq) -> Ca(OH)2(aq) + 2Sn(s) 3. Life on Earth is dependant on the ability of plants to react carbon dioxide
with water to produce glucose (C ₆ H ₁₂ O ₆) and oxygen. The reaction requires the energy of the sun in order to occur. a) Classify the reaction. (1 mark) b) Is energy a product or a reactant and is this reaction endothermic or exothermic? (1 mark) Energy 6CO ₂ + 6H ₁ 0 \Rightarrow C ₆ H ₁₂ O ₄ + 9O ₅ (Photosynthesis) B) Keychant / Endothermic
4. What is meant by the term aqueous (often shown as aq)? (1 mark) A solid chemical dissolved in water to
A Solid Chemical ansolics, fr
produce a solution
5. In order to classify a chemical reaction as neutralization, what types of chemicals must be in the reaction? (1 mark) Acid + Base

Outcome 3: Predicting the Outc	omes of Reactions
and the standard require a partic	cular gas in order to occur. What is this gas on reaction of a carbon compound? Provide
0.5	е
<u>ga</u> <u>269</u>	eg. burning propage on BBQ.
products CO2 + H20	311
·	1 Call Itio
one reaction, any fluorine gas created in acid which would eat glass. What is the cacid? (1 mark)	s to form poisonous fluoride compounds? In the state of the product of the state of the product of the state
F ₂ + H ₂ O ₍₂₎ -	- Land
fluorine	acid
<u>Jas</u>	
3. Predict the results of the following r	eactions: (5 marks)
HBr + Cl ₂ -> single replace	
CoCl2(aq) + KNO3(aq)	-> double replacement (o(NO3) ₂ + KC)
HNO3 + Ba(OH)2 -> ne	Ba(NO ₃) ₂ + HOH
$H2 + N2 \rightarrow synthesis$	
CaCO3 -> decomposition	Ca+ CO2 (actually) Ca+ CO3 (acceptable)
OR	Ca + CO2 (acceptable)

Review

1.	The name of the compound with the A. sulfur dichloride C. tetrasulfur dichloride	ne formula S ₂ Cl ₄ is: B. sulfur chloride D disulfur tetrachloride		
	The charge on mercury in Hg ₃ (PO ₂) A.+1 C.+3	D. +6		
3.	How many moles are in 20.0 gran Â) .500 moles C. 800.0 moles	ns of calcium? B. 2.00 moles D. 0.100 mole		
4.	0.50 moles of Au contain: A. 6.0 X 10 ²³ atoms C. 3.0 X 10 ²³ atoms	B. 3.0 X 10 ²⁴ atoms D. 1.2X 10 ²⁴ atoms		
	Which of the following is not an example $A. C_2H_5$ $C. C_2H_4O$	D.C ₃ H ₆		
6. What is the concentration of a solution containing 4.0 moles of NaCl in				
20	OO. mL of water A. 1.0M C. 4.0M	B)2.0M D 8.0M		
7. How many grams of HCl are required to produce 5.00L of a .500M solution? B. 182g				
	A. 3.65g © 91.2g	D. 9.12g		
8. What is the concentration of a solution if 80.0g ofNaOH(s) are dissolved in				
1(00.mL of water	B. 2.00M		
	A. 0.200M ©. 20.0M	D. 800M		