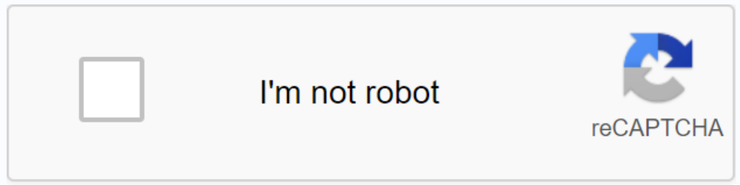

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Theoretical and percent yield worksheet pdf

Arkansas State University Department of Chemistry and Physics spreadsheets Theoretical rate/rate of return 1. Considering the following equation: _____ K2PtCl4 + _____ NH3 g _____ Pt(NH3)2Cl2 + _____ KCl a) Balance the equation. b) Determine the theoretical recovery of KCl if you start with 34.5 grams of NH3. c) From 34.5 g of NH3 and you isolate 76.4 g of Pt(NH3)2Cl2, what is the percentage? 2. Taking into account the following equation: H3PO4 + 3 KOH g K3PO4 + 3 H2O If 49,0 g of H3PO4 is reacted to with an additional KOH, determine the percentage recovery of K3PO4 if you isolate K3PO4 49,0 g. 3. Taking into account the following equation: Al2(SO3)3 + 6 NaOH g 3 Na2SO3 + 2 Al(OH)3 If you start with 389,4 g of Al2(SO3)3 and isolate 212,4 g of Na2SO3, what is the rate of return for this reaction? 4. Taking into account the following equation: Al(OH)3 (s) + 3 HCl (aq) g AlCl3 (aq) + 3 H2O (l) If you start with 50.3 g Al(OH)3 and isolate 39.5 g of AlCl3, what is percentage recovery? Answers In this spreadsheet, we practice identifying the reagent-limiting reagent and calculating the percentage return of the desired products based on actual and theoretical returns. Q2: The student processed 15 g of copper(II) oxide with excess hydrochloric acid and purified the copper (II) chloride product by re-excreting. The final mass of pure copper (II) chloride was 11 g. What was the percentage return on the nearest integer? Q3: What is the formula for calculating the percentage of actual return and theoretical return? APercentageyield = actualyieldtheoreticalyield BPercentageyield = theoreticalyieldactualyield×100% CPercentageyield = theoreticalieldactualyield DPercentageyield = actualyieldld ×100% EPercentageyield = actualyieldtheoreticalyield×100% Q5: In an attempt to make calcium oxide, the student heats 100.0 g of calcium carbonate and weighs the remaining solid material. The final mass is 62.3 g. What is the percentage recovery of calcium oxide to 1 decimal place? Q6: 1 mole propane is burned using 7 moles of oxygen according to equation CH+OHO+CO3822 By balancing the equation, identify the limiting reagent of this reaction. Q7: 20g NaAlH4 reacts with 10g LiCl to produce 8.3g LiAlH4: NaAlH+LiClLiAlH+NaCl44M is the percentage return of this reaction to the nearest integer? Q8: Sodium carbonate can be made using solvay process according to equation 2NaCl+CaCONaCO+CaCl3232 If 29.25 g of sodium chloride reacts to 50.00 g calcium carbonate, which is a restrictive reagent? What NaCl mass is needed to react fully with caco3? Enter your answer to 1 decimal place. Q9: Methanol combustim may be represented by the following chemical equation: 2CHOH+3O2CO+4HO3222 Where are the following molar relationships between CHOH3 and O2 Oxygen? Q10: In an industrial reaction, iron oxide reacts with carbon to the production of iron and carbon monoxide: FeO+4C3Fe+4CO34Calits a percentage yield to the nearest integer if 2 kg of FeO34 produces 800 g of iron. Q11: Which of these is not a factor that can affect percentage returns? A Quantity of gas produced B Reaction is reversible C Product loss during separation or processing DUnwanted products formed from side reactions E Purity of reactions Q12: Anaerobic breath converts glucose (CHO)6126 into ethanol and CO2 according to the reaction of cho2CHOH+2CO6126252 Ethanol was produced at 405 g with a percentage return of 88%. How much glucose was used at the beginning of this reaction? Enter your answer in kilograms (kg) and 1 decimal place. Q13: The metal chloride compound reacts with hydrofluoride for the manufacture of metal fluoride and hydrogen chloride, as follows: MCl+4HFMF+4HCl4410 g MCl4 produces 5,55 g MF4 at a percentage yield of 85,1 %. Identify metal M in the atomic mass it calculated. AScandium BManganese CTitanium DVanadium EChromium Q14: 0.75 magnesium moles react with excessive sulphuric acid to make magnesium sulphate and hydrogen gas: Mg+HSOMgSO+H2442 What mgso4 mass is produced? Enter your answer to the nearest integer. What happens if the amount of magnesium doubles and too much sulphuric acid is used? A MgSO4's return will double. B. MgSO4's profits are halved. C MgSO4's profits are quadrupling. D The yield of MgSO4 does not change. E MgSO4's profits are falling to zero. If 250 g of sulphuric acid is used, what happens if the amount of magnesium used quadruples? AMagnesium becomes an extra reagent. B. MgSO4's profits are halved. C MgSO4's profits are quadrupling. D There will be no reaction. EHSO24 is still an additional reagent. Q15: Which of the following is the best description for the term reagent restriction? A Reaction first used in reaction B Reaction, which is an additional C Reaction with the highest mass DIn reactive, used last in the reaction EE Reaction, which is the most static Q16: Which of the following statements best describes the theoretical yield? A The theoretical return is the same as the actual return multiplied by 100. Theoretical recovery is the quantity of product that may be obtained from a reaction if all reassers are converted into the product concerned. C Theoretical recovery is the quantity of the product obtained experimentally from the reaction. D Theoretical returns are the result of increasing the percentage return to actual return. Q17: The student isolated 25 g of the compound after a procedure that would theoretically produce 81 g. What was its rate of return? Enter your answer to 1 decimal place. Q18: How many CHCl242 molecules can be made from 15CH24 and 8Cl2 molecules? 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