

Chemistry 3U Exam Review Questions

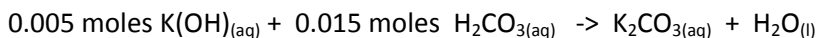
Will Cox

- Write the formulas and a balanced chemical equation for the following:
 - Sodium Chloride + Stannous Permanganate $\rightarrow$ Sodium Permanganate + Stannous Chloride
Answer: $2\text{NaCl} + \text{Sn}(\text{MnO}_4)_2 \rightarrow 2\text{NaMnO}_4 + \text{SnCl}_2$
 - Carbonic Acid + Cobalt (III) $\rightarrow$???
Answer: $3\text{H}_2\text{CO}_3 + 2\text{Co (III)} \rightarrow \text{Co}_2(\text{CO}_3)_3 + 3\text{H}_2$
- Glucose is a simple sugar which circulates in the blood of animals as blood sugar. Glucose has the following composition by mass:
C:40.0% H: 6.70% O: 53.3%
 - Calculate the Empirical formula of Sucrose.
Answer: CH_2O
 - What is the molecular formula if Glucose has a molecular mass of 180 g/mol?
Answer: $\text{C}_6\text{H}_{12}\text{O}_6$
- What would be the mass in **kilograms** of 5.74 moles of Dichromate (Cr_2O_7)?
Answer: 1.24kg
- A doctor orders 1250mL of hydrogen peroxide (H_2O_2) with a concentration of 0.750 mol L^{-1} for her next month of work. What will be the mass of the hydrogen peroxide she purchased?
Answer: 31.9g
- Metals W, X, Y, and Z are reacted with solutions $\text{W}(\text{CO}_3)$, $\text{X}(\text{CO}_3)$, $\text{Y}(\text{CO}_3)$, and $\text{Z}(\text{CO}_3)$. Metal Y reacts with none of the solutions, Metal Z reacts with both X and Y solutions, metal W reacts with the Z solution, and metal X reacts with the Y solution but nothing else. Knowing this, state the metals in increasing order of reactivity.
Answer: Y, X, Z, W
- Determine the missing value:
 - If 3.75 moles of an unknown gas has a temperature of 33 degrees Celsius and has a volume of 132L. What is the pressure?
Answer: 72.3kPa

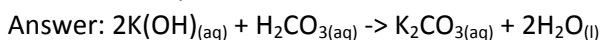
- b) Chlorine gas is held in a container at a temperature of 23 degrees Celsius, has a volume of 113L and a pressure of 95.8kPa. How many moles of chlorine gas is in the container?

Answer: 4.40 moles

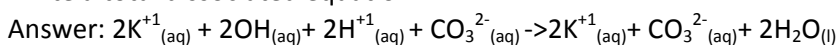
7. Consider the following equation:



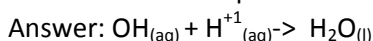
- a) Balance the equation.



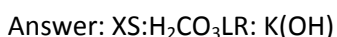
- b) Write a total dissociated equation.



- c) Write a net ionic equation.



- d) Find the XS and LR



- e) Determine the maximum mass of $K_2CO_{3(aq)}$ in grams.

Answer: 0.691g

- f) Determine moles of XS remaining.

Answer: 0.005 moles

- g) If 0.587g of $K_2CO_{3(aq)}$ was found when Colonel By students conducted this experiment, what would be the percent yield?

Answer: 84.9%

- h) What would be the percent error?

Answer: 15.1%

8. Ms. Pall's glass of apple juice has a pH of 3.6. Knowing this, determine the:

- a) pOH of the apple juice

Answer: 10.4

- b) Hydrogen ion concentration in the apple juice

Answer: $2.51 \times 10^{-4} \text{ mol L}^{-1}$

- c) Hydroxide ion concentration in the apple juice

Answer: $3.98 \times 10^{-11} \text{ mol L}^{-1}$