

Name _____

Date _____

Due Date _____

Mark _____/32

Correct and Hand in Again by _____

Chemistry 11

Hand In Assignment # 15 – Precipitation and Neutralization Reactions, Individual Ion Concentrations and Titrations

This Assignment will be marked and you are allowed to do one set of corrections. Show all of your work, including units in your work and answers.

1. An aqueous solution of silver nitrate is mixed with an aqueous solution of ammonium carbonate and a precipitate is observed.

- a) Make an “ion box” showing the four ions involved. (1 mark)

- b) Write a ***balanced formula equation*** for this reaction: *(include all subscripts)* (2 marks)

- c) Write a ***balanced complete ionic equation*** for this reaction: *(include all subscripts)* (2 marks)

- d) Write a ***balanced net ionic equation*** for this reaction: *(include all subscripts)* (2 marks)

- e) This type of reaction is a type of double replacement called _____ (1 mark)

2. An aqueous solution of sulphuric acid (H_2SO_4) is mixed with an aqueous solution of aluminum hydroxide and a reaction occurs.

- a) Make an “ion box” showing the four ions involved. (1 mark)

9

- b) Write a **balanced formula equation** for this reaction: (include all subscripts) (2 marks)

- c) Write a **balanced complete ionic equation** for this reaction: (include all subscripts) (2 marks)

- d) Write a **balanced net ionic equation** for this reaction: (include all subscripts) (2 marks)

- e) This type of reaction is a special type of double replacement called _____ (1 mark)

3. 25.0 mL of a solution of H_2SO_4 of unknown concentration is titrated with a standard solution made up of 0.345 M NaOH. The data table for the titration looks like the following:

	Trial 1	Trial 2	Trial 3
<i>Initial NaOH burette reading (mL)</i>	0.00	12.34	23.90
<i>Final NaOH burette reading (mL)</i>	12.34	23.90	35.24
<i>Volume of NaOH used (mL)</i>			

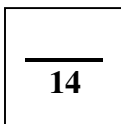
- a) Fill in the “Volume of NaOH used” for each trial in the table above. (1 mark)
- b) Calculate the “Best Average Volume” of NaOH used from the data (in mL). (1 mark)

_____ mL

Express this volume of NaOH used in L (1 mark): _____ L

- c) Write the **balanced formula equation** for the reaction taking place in this titration. (1 mark)

- d) From the information given, calculate the $[\text{H}_2\text{SO}_4]$ in the original H_2SO_4 solution. Show all of your work! (3 marks)



Answer: $[\text{H}_2\text{SO}_4] =$ _____ M

4. A student adds 15.0 mL of water to a 25.0 mL sample of 0.80 M Li_3PO_4 solution.
- a) Calculate the final $[\text{Li}^+]$ (2 marks)
- b) Calculate the final $[\text{PO}_4^{3-}]$ (1 mark)
5. Calculate the mass of solid K_2CO_3 which must be added to 500.0 mL of water in order to make a solution in which the $[\text{K}^+]$ is 3.0 M. (3 marks)
6. 60.0 mL of 0.45 M K_3PO_4 is mixed with 240.0 mL of 0.20 M K_2SO_3 . Calculate the final concentration of all three ions in the solution. (3 marks)

Answer: $[\text{PO}_4^{3-}] = \underline{\hspace{2cm}}$ M $[\text{SO}_3^{2-}] = \underline{\hspace{2cm}}$ M $[\text{K}^+] = \underline{\hspace{2cm}}$ M