**Your name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Rubric for Determining Chemical Formula Theory**

**\_\_\_/2 Title of Experiment goes at top of Theory**

**Your name below title**

***\_\_/3 Theoretical reaction behavior***

\_\_expected changes before and after stoichiometric balance is reached.

\_\_expected behavior of reaction at excess Cu2+ and excess OH- (cloud vs clear asserted)

***\_\_\_/5 Cu(II) Cation Concentration and mole count***

Using symbolic representations for mass and volume, (NO NUMBERS FROM EXPERIMENT !!!) describe THEORETICALLY how the Cu(II) mole count in 1 mL of Cu(II) stock is deduced.

\_\_MW included as symbol only \_\_\_ only symbolics for V, w \_\_\_reasonable explanation in English

\_\_\_/5 ***OH- Anion Concentration and mole count***

Given a stock concentration of Co for NaOH, show in symbolic terms , (NO NUMBERS FROM EXPERIMENT !!!) describe THEORETICALLY how the OH- mole count in 1 mL of OH- is deduced. \_\_\_initial concentration as symbol only \_\_\_conversion to mol/mL \_\_\_\_reasonable explanation in English

***\_\_\_/20***  ***How stoichiometric balance point is deduced***

\*WITHOUT directly referencing Procedure, explain how OH- mole count is varied against the fixed mole count of Cu(II) , and how the `cross over’ from excess cation excess anion is theoretically determined. \_\_\_cloudy vs clear `expectation’\_\_\_notion that (OH-) is varied from high to low systematically \_\_\_\_ `cross over’ concept clear \_\_\_ pix ?

\*Explain symbolically how an estimate of x=OH-/Cu(II) mol ratio in Cu(OH)x formed during reaction is attained using the above .

\_\_\_ average notion explained \_\_\_symbolic representation and manipulations clear

***\_\_/5 Possible Error sources***

Discuss major, perceived sources of error in determining the experimental x in Cu(OH)x.  FYI: “human error” is not one of the sources. Avoid a list. Provide not only error sources but why you think one or more of them contribute most to errors. \_\_\_\_ at least 3 sensible, practical sources identified (volume of pipet delivery for both Cu2+ and OH-, mass determination, dilution of Cu2+, separation problems (cloudy material settles ?)

\_\_\_/10 **workmanship** English, organization, general appearance etc.

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