

	Name: _____		
1	Pre Quiz o Prelab Questions	5	
2	Introduction and Procedures A. Introduction <ul style="list-style-type: none"> Objective of Expt. Background information: B. Procedures <ul style="list-style-type: none"> Flow chart pictorial of procedures and outline of procedures in Expt. Diagram of information (data) to be recorded during Expt. (<u>Table form.</u>) Safety and disposal information. 	15	
3	Data, Observe. Results and Calc. C. Data and Observation <ul style="list-style-type: none"> Observations should be recorded and any errors that may have occurred. What were the parameters of the program used in the Vernier experiment? Data in <u>table form</u> & detailed observation written in the table. All data entry should contain the proper number of significant figures and units. Data should always be recorded in an organize fashion. Data should be collected for room temperature, room temperature + (5° to 10°) and room temperature - (5° to 10°) C. If data is to be attached as an addendum to the report, indicate it here. Export the LoggerPro data to an Excel spreadsheet and save data into the idisk. (Attach the data as an appendix in the final report) Calculations & Results (This section must be typed) D. Calculations: Show the data of concentration versus time. <ul style="list-style-type: none"> Work up this data based on graphs for 0th, 1st and 2nd order kinetics. Show graphs of concentration vs. time (0th order), Ln concentration vs. time (1st order) and 1/concentration vs. time (2nd order). Analyze the data using LINEST. Show the results for the room temperature data from the LINEST analysis. Also show the equation for a straight line and the correlation factor R² for each. Summarize these results equation in your result table. Based on best-fit line, determine the rate constant and then the rate law of the reaction with respect to crystal violet. Note the rate law will be the same for all temperatures. From the rate constant for the different temperatures, plot a graph of ln k vs 1/T and determine the activation energy (E_a) and the pre-exponential factor (A) Show calculations for determination of the result that will be summarized by the result table. Show graphs, (3 graphs for RT, 1 graph for RT-ΔT°, 1 graphs for RT+ΔT°, °1 graph of lnK vs. 1/T.) At the minimum you should have 6 graphs, 3 graphs for RT, 1 graph for RT+5°, 1 graphs for RT+10°, (these will be based on the rate order you determined to be correct), 1 graph of ln K vs. 1/T.) Table of results should include the following below but it is not limited to these result. <ol style="list-style-type: none"> Order in terms of methyl viologen. Rate Law expression: Rate = k [CV⁺]^x don't forget units of k. Rate Constant k for each temperature Activation Energy, E_{act} Collision freq. Factor, A Overall rate law expressed in the form: Rate = A · exp (-E_a/RT) [CV⁺]^x where A, E_{act} and x are values obtained in this experiment. 	20	
4	Discussion / Conclusions and Post-Lab Questions E. Discussion <p>Discuss the significance of the experiment. What reaction was under investigation? Based on your result, what can you say about the order of the reaction in terms of crystal violet? Why is the hydroxide not considered in the rate law? How was the rate law determined in this experiment? Why should the molecularity be identical for all temperature? What is the Arrhenius equation and how did you use the data in this experiment to determine the activation energy and the pre-exponential factor? What is the significance of the activation energy and the collision factor? What does this say about the experiment? Diagram a reaction coordinate diagram for the reaction in this experiment. Show the activation energy and how the mechanism relates to this diagram.</p> F. Conclusion <ul style="list-style-type: none"> Summary of the goal of the experiment and how that goal was achieved in the experiment. 	20	
5	Overall Presentation (of lab notebook) <ul style="list-style-type: none"> Lab technique during experiment; example are, class preparation, safety glasses precautions and leaving the laboratory clean. Report presentation; example are the headings of each report which includes name, title, lab partner, date and section #. Legibility of report. Is the report easy to read or is important information jotted down by small print in the corners of the lab report. The overall impression is important. 	10	
	Total = _____	= 100 %	