Name_____   Chem 1194: Kinetics Report   99

Date_____ Section _____

Group Number ___

Others in Your Group
Last Name and (First Name or Initial)

Group Runs

T_{final} of Run (°C)   _____ _____ _____ _____ _____ _____ _____ _____

$1/T_{final}$ of Run (K^{-1})   _____ _____ _____ _____ _____ _____ _____ _____

Time of Run (s)   _____ _____ _____ _____ _____ _____ _____ _____

ln (t) of Run   _____ _____ _____ _____ _____ _____ _____ _____

Using the data in the table above, submit an Excel graph of ln time as a function of 1/T. (Your own - *not* a copy of your group's.) On the Excel graph, report the trendline with units.

Sample Calculation of E_a from the slope and R.

Prediction of Reaction Time at "Common" Temperature

Given temperature _____   Predicted ln t _____, time _____

Sample calculation of these

Calculation of relative difference(%)

Calculation of Your   Calculation of Your
Group's $[I_2]_{initial}$ Group's Reaction Rate

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Name_____

Determination of Rates for Each Group at "Common" Temperature

Group #	$[I_2]_{initial}$ (M)	$[acetone]_{initial}$ (M)	$[H^+]_{initial}$ (M)	Time (s)	Rate (mole rxn/L s)
1	_____	_____	_____	_____	_____
2	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____

_____   _____   _____
$\ln([I_2]_{group1}/[I_2]_{group2})$ $\ln([acet]_{grp1}/[acet]_{grp3})$ $\ln([HCl]_{grp1}/[HCl]_{grp4})$

Reaction Orders from Relative Rates at Common Temperature

$\dfrac{Rate_1}{Rate_2} =$ _____ $\ln\dfrac{Rate_1}{Rate_2} =$ _____ $\dfrac{\ln(Rate_1/Rate_2)}{\ln([I_2]_1/[I_2]_2)} =$ _____ $m =$ _____

$\dfrac{Rate_1}{Rate_3} =$ _____ $\ln\dfrac{Rate_1}{Rate_3} =$ _____ $\dfrac{\ln(Rate_1/Rate_3)}{\ln([acet]_1/[acet]_3)} =$ _____ $n =$ _____

$\dfrac{Rate_1}{Rate_4} =$ _____ $\ln\dfrac{Rate_1}{Rate_4} =$ _____ $\dfrac{\ln(Rate_1/Rate_4)}{\ln([HCl]_1/[HCl]_4)} =$ _____ $p =$ _____

Write the rate law: Rate = _____

Common Temperature Rate Constant

	Group 1	Group 2	Group 3	Group 4
Rate Constant, k (_____ unit)	_____	_____	_____	_____

_____   Sample calculation
Average rate constant, k of k for your group