DATA SHEET FOR EXPERIMENT 2A

Name _____ Station # _____ Date _____

Name of person who has spectra attached to lab report _____

Team Synthetic Unknown # = _____

Section VB: Calibration Curve and Quantitative Analysis

analysis wavelength = _____ nm **(check that your wavelength is near 445 nm**)

Integration = _____ ms Averages = _____ Boxcar = _____

Conc. (μg/mL)	N_r (counts)	N_s (counts)	T (T mode)	A (A mode)
10				

From N_r and N_s in the S mode given above, calculate:

T (from count ratio) = N_s / N_r = _____;

A = - log T (from count ratio) = _____;

A = - log T (from T measured in T mode) = _____.

How well do the two calculated values for A above compare to what you measured for A using the A mode in the software?

Corrected Absorbance Setup:

Updated analysis wavelength = _____nm

Correction wavelength = _____nm

Integration = _____ ms Averages = _____ Boxcar = _____

Table I. Absorbance data for standards and samples - make a table in Excel and fill in as you collect this data. Make a plot and add a trend line and give the slope and intercept to three sig figs. Run Data Regression and find the SE for the slope and for the intercept. Add these to the plot as you did in the spreadsheet quiz the first week.

Conc. (μg/mL)	A (combo 1)	Ratio for A values for Stds
2		
10		
25		
syn unknown		
Y1		
Y2		
Y3		

Section VIB: Stray Light

measured A (combo 1) = _____ (**check that value is between 2 and 3.5**)

Section VIIB: Detection Limit

Attach the labelled spreadsheets with the 20 repetitive measurements of A with a stationary cell and with cell re-positioning.

Table II. Noise and Cell Positioning Data

channel	quantity	with stationary cell	with cell re-positioning
A	Mean		
A	Std Dev		
B	Mean		
B	Std Dev		
Combo 1	Mean		
Combo 1	Std Dev		

Section VIIIB: Polychromatic radiation

Fill in the shaded cells in the table below with the measured values for the T you took using the Turner spectrometer at both concentrations and calculate and report the equivalent value for A for both solutions using the Turner spectrometer..

Table III. Polychromatic Radiation Effects

Spectrophotometer	**c (M)**	**T**	**A**
Cary 219	0.02	-	0.085
Cary 219	0.08	-	0.320
Turner	0.02	(measure)	(calculate)
Turner	0.08	(measure)	(calculate)

SUMMARY SHEET and CHECKLIST FOR EXPERIMENT 2A

Section II: Solution Preparation - Mass data - report grams used to +/- 0.0001 g and use leading zeros where appropriate, (i.e., **0**.1876).

mass of whole vitamin pill	
mass of sample for solution X1	
mass of sample for solution X2	
mass of sample for solution X3	

Checklist for the short answers to questions that the grader will be looking for in your report:

Question	Done?	Information Requested
IVB. 2.		wavelength of peak maximum
		half width of absorption band used for analysis
VB. 1.		regression calibration equation
		standard error slope
		standard error intercept
VB. 2.		absorptivity in (μg/mL)-1 cm-1
		calculated **molar** absorptivity for riboflavin (ε)
VB. 3.		riboflavin concentration in the synthetic unknown
VB. 4.		effective spectral bandpass
VB. 5.		s / wh
VB. 6.		the mean and RSD of riboflavin in a pill (mg B2 / tablet)
VIB. 1.		forecast value of absorbance for
		100 μg/mL riboflavin solution
VIB. 2.		percent stray light, f
VIIB.		values of the three detection limits based on:
		a) readout resolution
		b) noise
		c) cell positioning