Lab report: relationship between concentration and absorbance

Science, Chemistry

involves measuring the absorbance of several concentrations of the pure substance or the " standard" substance determine relationship between concentration and absorbance compared results from unknowns How to use Linear Regression for Generating a Standard Curve? © 2010 by M. Olaveson UTSC 2 BIO A01F-Fall 2010 - ASSIGNMENT # 2 - Preparing a Standard Curve using Excel 2007 Assignment # 2 Analysis of Data from Lab 2-Exercise 2 Table 2. 6. Protein in Test Tubes prepared for Standard Curve. 1. Follow instructions in Lab Manual and complete Table 2. 6 © 2010 by M. Olaveson UTSC 3 BIO A01F-Fall 2010 - ASSIGNMENT # 2 - Preparing a Standard Curve using Excel 2007 Assignment # 2: Table 2. 7. Absorbance (at 550 nm) as a function of protein concentration. 2. Complete Table 2. 7 © 2010 by M. Olaveson UTSC 4 BIO A01F-Fall 2010 - ASSIGNMENT # 2 - Preparing a Standard Curve using Excel 2007 5. After plotting XY Scatter Plot — perform a Linear Regression Analysis to generate a " line of best fit' by using the " Trendline" option Determine the Equation for the Line and the Correlation Coefficient (R^2 Value) by clicking the options in the " Trendline" menu: - choose " intercept = 0" - choose " show equation" choose show " R^2 value" Use Equation to determine the protein concentration in the Unknown Sample (make sure to indicate Unknown #) Complete Assignment # 2 according to Instructions on Blackboard under " Assignments — Assignment # 2" and submit to your TA at beginning of Lab 3 © 2010 by M. Olaveson UTSC 6 BIO A01F-Fall 2010 - ASSIGNMENT # 2 - Preparing a Standard Curve using Excel 2007 Assignment # 2: From Table 2. 7 — use the Protein Concentration and corresponding Absorbance (at 550 nm) to plot an XY Scatter Plot (using Excel / Star Office / Graphing Program) HINT: graphing options are found in the

Chart Function in Excel (use Chart Wizard) Follow instructions in: Appendix 2 (p. 196-198) in Knisely, K. 2005. A Student Handbook for Writing in Biology (2nd Edition). Sinauer Assoc. Sunderland, Mass. Appendix 2 (p. 221-226) in Knisely, K. 2009. A Student Handbook for Writing in Biology (3rd Edition). Sinauer Assoc. Sunderland, Mass. © 2010 by M. Olaveson UTSC 5 BIO A01F- Fall 2010 - ASSIGNMENT # 2 - Preparing a Standard Curve using Excel 2007 Assignment # 2:

TUBE	WATER ADDITION SOLUTION	CASEIN ADDITION	AMOUNT OF CASEIN in 2 ml (mg CASEIN)	CASEIN CONCENTRATION (mg CASEIN / 1 ml solution)
1	2.0 ml	none	0	0
2	1.5 ml	0.5 ml	5	2.5
3	1.0 ml	1.0 ml	10	5
4	0.5 ml	1.5 ml	15	7.5
5	none	2.0 ml	20	10
6	none	2.0 ml of protein sample of unknown concentration		

TUBE	C1 PROTEIN CONC. (mg/ml) before adding Biuret Solution	V1 Volume (ml) before adding Biuret Solution	V2 Volume (ml) after adding Biuret Solution	C2 PROTEIN CONC. (mg/ml) after adding Biuret Solution	ABSORBANCE (at 550 nm) (from Table 2.6)	PROTEIN CONC.
Tube 1 (blank)	0	2	10	0	0	
Tube 2	2.5	2	10	0.5	0.226	
Tube 3	5	2	10	1	0.334	
Tube 4	7.5	2	10	1.5	0.496	
Tube 5	10	2	10	2	0.558	
Tube 6		2	10		0.189	

Unknown Sample # _____