

Chem 4850/6850
Problem Set #3

1. Immunoglobulin (IgG) is determined by nephelometric immunassay. A patient's serum when reacted with an anti-IgG preparation, produces a relative scattering value of 37 units.

<u>IgG Concentration (g/dl)</u>	<u>Relative Scattering Intensity</u>
Blank	0
0.4	4.0
0.8	14.3
1.2	31.0
1.6	49.0
2.0	67.0
2.4	82.0
2.8	90.0

What is the patient's IgG level?

2. Immunoglobulin (IgA) is determined by rate nephelometry. If a patient's serum produces a rate of 45.0 arbitrary rate units per second, what is his or her IgA concentration? Consider the data on the standards.

<u>IgA Concentration (g/100 mL)</u>	<u>Reaction Rate in Arbitrary Units</u>
0	0
0.1	4.7
0.2	21.0
0.3	38.5
0.4	57.0
0.5	74.0
0.6	90.0
0.7	98.0

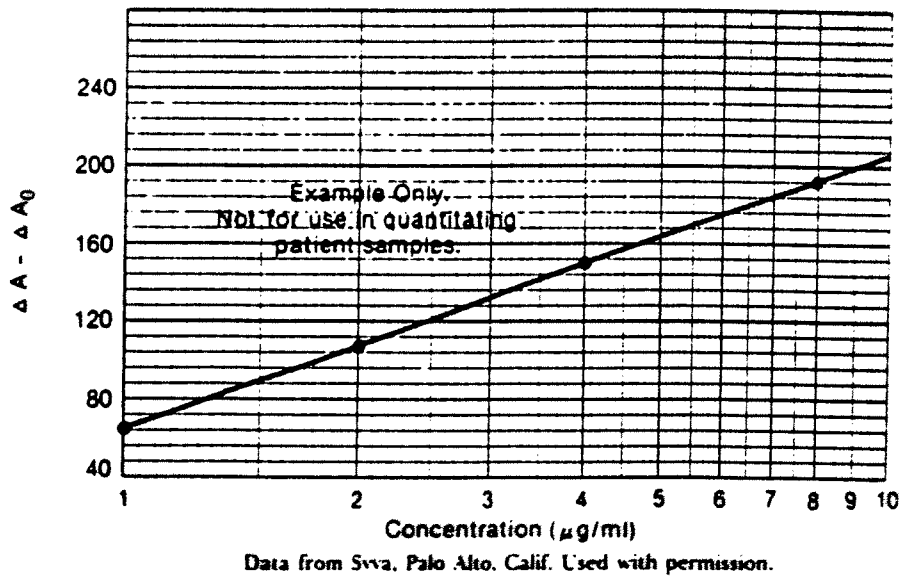
3. T_4 (*l*-thyroxine) can be analyzed by radioimmunoassay. If a competitive assay is done and the following data result, what will be the T_4 level in a patient whose serum produces a count rate of 37,000 cpm?

<u>T_4 Concentration (mg/dl)</u>	<u>Count Rate (cpm)</u>
0.1	48.000
0.5	44.750
1.0	41.700
2.0	36.500
3.0	32.500

4. Procainamide can be measured by EMIT methodology. The change in absorbance per 30 seconds is used in the methodology. The following standards are run.

<u>Procainamide ($\mu\text{g/mL}$)</u>	<u>Concentration (mg/l)</u>
0	Blank
1	Standard 1
2	Standard 2
4	Standard 3
8	Standard 4
16	Standard 5

The rate/30 sec for the blank is called ΔA_0 . The rate/30 sec is determined for each of the five standards. The data are plotted in the next figure.



If $\Delta A - \Delta A_0$ for a patient's serum is 130, what is the concentration of procainamide in the serum?