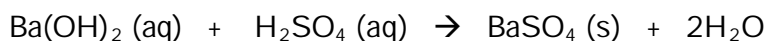


**CHM 103 EXAM II**

Show all calculations with units and correct significant figures. Write in complete sentences. Turn in your take-home question with this exam. **GOOD LUCK!**

1. Consider the conductivity titration for the following acid-base precipitation reaction given below. The sulfuric acid is the titrant in the titration. (35)



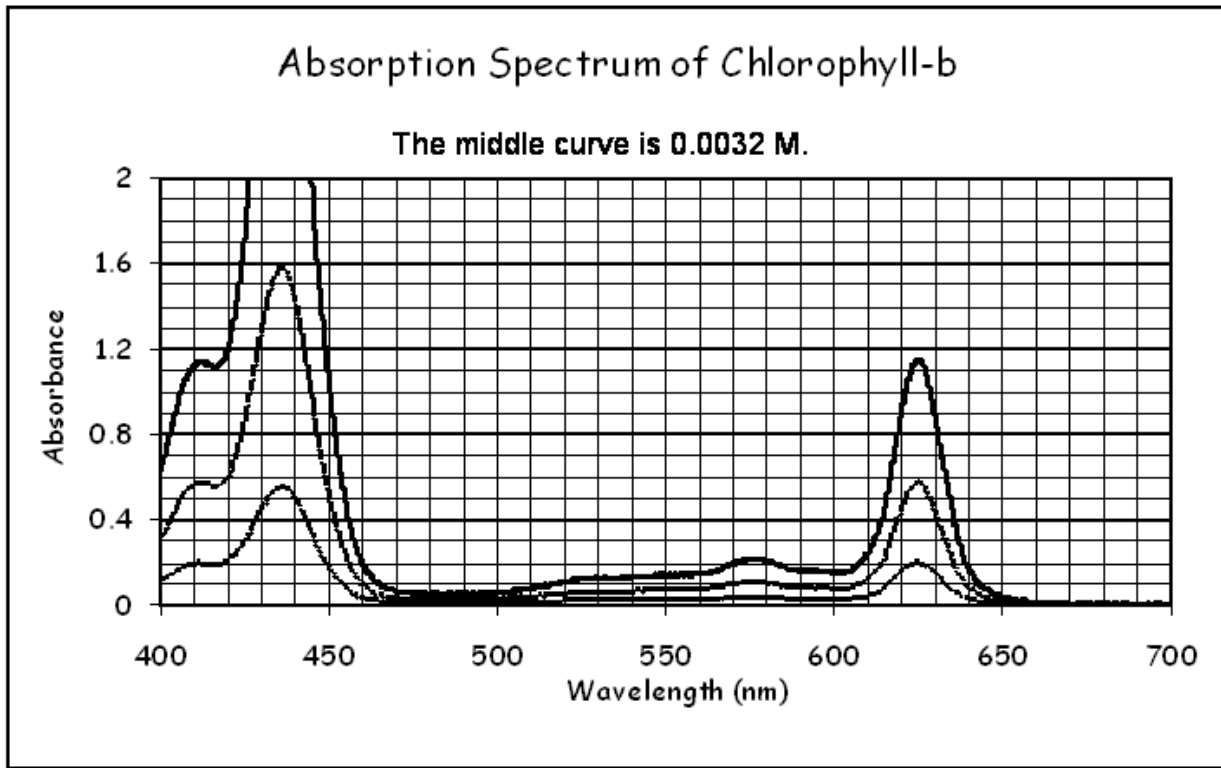
Plot an appropriate graph of the data and accurately determine the equivalence point for the titration. Show on the graph or describe your method.

Volume of Titrant, mL	Conductivity
0	3700
5.0	3100
10.0	2550
15.0	1900
20.0	1400
23.0	1000
27.5	500
36.5	500
41.0	1000
45.5	1500
50.0	2000

If the sulfuric acid used is 0.15 M and 25.0 mL of  $\text{Ba(OH)}_2$  was titrated, what is the concentration of the  $\text{Ba(OH)}_2$ ?

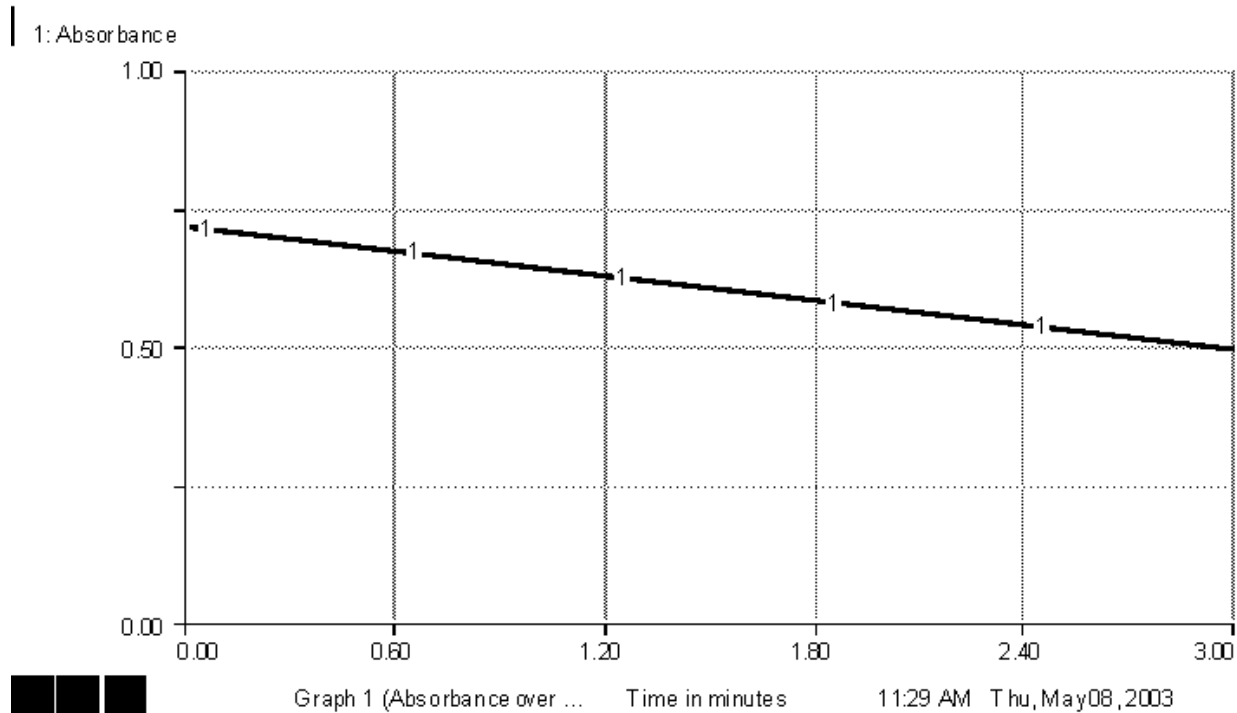
Why is the conductivity of the equivalence point equal to zero?

2. The absorption spectrum of chlorophyll-b is given for three different concentrations. (20)



Calculate the concentration of the higher and lower concentration plots. Explain in detail how you got the concentration for each.

3. Consider the absorbance against time graph for the crystal violet kinetics experiment given below. The run was done with 2.0 mL CV<sup>+</sup> and 2.0 mL OH<sup>-</sup> in a 1.2 cm cell at a  $\lambda_{\text{max}}$  of 590 nm and 25°C. Remember: Rate =  $k(\text{CV}^+)(\text{OH}^-)$  (15)



Sketch the following lines on the graph above in the indicated color:

- Red same run at 50 nm higher wavelength
- Green same run at 50°C
- Blue student added 2.0 mL water in place of 2.0 mL OH<sup>-</sup>