Spectral study for Determination of the composition of iron complex

Materials:

1- standard solution of ferric ammonium sulphate 0.0005 M
2- spectrophotometricaly reagent 1,10-phenanothroline 0.0005 M
3- Sodium acetate 10g/100 ml.
4- Hydroxyl amine hydrochloride 10g/100 ml.

Theory:

Two different analytical methods are used spectrophotometrically to study the composition of complexes:

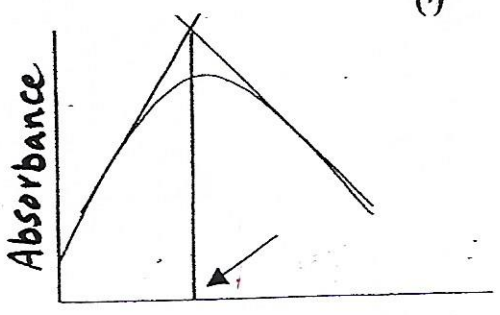
1- continuous variations method:

In this method the sum of the molar concentrations of the two reactants is kept constant as their ratio is varied. The abscissa of the extrapolated peak will correspond to the ratio present in the complex.

Procedure:

1- transfer 0,1,2,3,4,5,6,7,8 ml of iron solution (V_m) to 9 volumetric flasks 25 ml , then add to each 0.5 ml of hydroxyl amine hydrochloride solution.
2- Add to all flasks in order 10, 9, 8,7,6,5,4,3,2 ml of spectrophotometricaly reagent (V_L) (always total =10), then wait for 10 min.
3- Add to all flasks 4 ml of sodium acetate solution and complete to the mark by distilled water.
4- Measure the absorbance of all solutions at 508 nm - * blank??
5- Plot the relationship between Absorbance and the ratio [L/M] as shown in figure (1), and then calculate the ratio [L/M].

(1)



V_L/V_M+V_L
V_M/V_M+V_L