Summary

SUMMARY

1- ***Chapter (I)*** includes a literature survey of the previous studies on azo dyes and Schiff bases and their complexes with different metal ions. This survey includes spectrophotometric, conductometric, potentiometric and voltammetric studies on azo dye and Shiff base complexes. Also this chapter contains a literature survey on the thermal studies which were done on solid complexes of azo dye and Schiff base ligands.

2- The Exprimental part ***chapter (II)*** includes the preparation of the azo dyes and Schiff bases under investigation, and their complexes with some transition metal ions. It comprises also information about the instruments and measurements which were used for spectrophotometric, conductimetric, poteniometric, voltommetric, IR, as well as thermal analyses.

3- ***Chapter (III)*** includes studies on the spectral characterisation of the organic ligands, where the electronic absorption spectra were studied in different organic solvents of protic and aprotic nature is discussed in terms of different macroscopic and microscopic parameters of the solvents on the electronic transtions of ligands under consideration. Also, the spectral behavior of ligands in universal buffer solutions is considered to determine their ionisation constants using three different methods.

The IR spectra of ligands under investigation are studied and the different functional groups are assigned like ν_{OH}, $\nu_{N=N}$ and $\nu_{C=N}$. On the other hand, the ^{1}H-NMR spectra for different types of hydrogens expected for I_{a-b} and II_{a-c} under study can be numerated determined and correlated to the molecular structure of the ligands. Cyclic voltammetry was carried out as a qualitative study on the ligands under investigation to

give light on the reduction and oxidation behavior of such organic substance.

4- ***Chapter (IV)*** contains studies of complexes in solution where three different points were disscussed:

a- The conductimetric titrations which was done to determine the stoichiometric ratio of the complexes formed using diluted concentrations of ligands ($1x10^{-3}M$) in 20 % (V/V) alcholic solution.

b- The potentiometric titrations which studied and done by using 0.1M HCl and 1.0M KCl. From the data obtained, the ionization constants of ligands and formation constants of the complexes formed were obtained

c- The differential pulse voltammetry as a voltammetric technique was applied to study the complexes formed between ligands under investigation and metal ion to know the stiochoimetric ratio of such complexes.

d- The spectrophotometric studies of metal complexes were alse performed to determine the optimum conditions for each complex and after that the stability constant of such complex was calculated using two different spectrophotometric methods. Also Beers low and Ringbom ranges were determined and the effect of foreign ions on the complexes formed were studied.

5- ***Chapter (V)*** includes studies of the solid chelates including elemental analysis, molar conductance measurements, TG, DTA, IR, ^{1}H-NMR and electronic absorption spectra in nujol mull and DMF.