SUMMARY
The results obtained in the preparation of hydrzones from resacetophenone and salicylic acid hydrazide or benzoic acid hydrazide, spectrophotometric and polarographic investigations and the analytical applicability of the reagent for the determination of vanadium besides results obtained in the study of composition stability of the metal complex are presented in this dissertation.

The dissertation is for convenience, divided into two parts (Part A and Part B).

Part A deals with general introduction and consists of the following two chapters.

Chapter I. In this chapter, general theoretical aspects of metal complexes are discussed.

Chapter II (Experimental) is divided into two sections.

Section (i) - The procedures for the preparation of the compounds investigated are given in detail in this section.

Section (ii) - Presents an account of the description of the instruments employed.

Part B consists of Chapter III and Chapter IV.
Chapter III is divided into three sections.

In Section (i), spectrophotometric study of res-acetophenone salicylic acid hydrazone is discussed briefly.

Section (ii) - Presents a brief survey of potentiabilities of resacetophenone salicylic acid hydrazone as spectrophotometric analytical reagent.

Section (iii) deals with the analytical studies carried out on vanadium(V) with RSH. V(V) in acetic acid (60% V/V) solution give a deep brownish red complex. The composition, stability constant, molar absorptivity (ε) and Sandell sensitivity are found as 1:1, 2.64 x 10^6, 6.0 x 10^3 lit mole^{-1} cm^{-1}, 0.0085 μg/cm^2 respectively.

Chapter IV deals with the polarographic behaviour of resacetophenone salicylic acid hydrazone and res-acetophenone benzoic acid hydrazone. The compounds exhibit a single wave in acidic pHs and two waves in alkaline pHs. The waves are diffusion controlled and irreversible. Two sites susceptible for reduction are present in the compound. These are exocyclic >C=N-NH- and exocyclic-NH-C-R group. The waves observed in the present investigation are attributed to the reduction of exocyclic azomethine group. The wave observed in acidic medium is ascribed to the four electron reductive cleavage
of N-N bond. In alkaline solutions, azomethine compounds exist in the azomethine anionic form, which is susceptible for chemical cleavage under the experimental conditions to the corresponding ketones. The first wave in alkaline solution is therefore ascribed to the reductive cleavage of N-N bond in azomethine anionic form. The second wave is due to the reduction of carbonyl compound found in the chemical cleavage of azomethine anionic form.