CONCLUDING REMARKS
Science, in general and chemistry in particular, has registered a phenomenal growth during the last few decades partly due to unceasing efforts of analytical chemists to develop new/modified analytical techniques for qualitative and quantitative analyses. This is reflected in the observation that majority of research articles in the field of analytical chemistry are invariably related to chemical analysis of various samples employing different techniques. With ever growing fields such as chemical, biochemical, pharmaceutical, environmental sciences etc, there has been a tremendous responsibility on analytical chemists to develop more and more accurate, simpler and sensitive methods for effective chemical analysis involving minute to trace amounts of sample(s) in simple or complex system(s). In the present investigations, sincere efforts have been made to contribute, a little, to analytical chemistry by way of developing simple, cost effective, rapid, sensitive and accurate methods for the determination of selected metal ions in various samples using spectrophotometry as a tool.

In the present study, some of the phenothiazine derivatives and catecholamines have been exploited as spectrophotometric reagents for the determination of Cr (VI), V (V), Mo (VI), W (VI), Fe (III), Au (III) and Ce (IV) in various samples as the selected compounds readily gave coloured species upon oxidation or complexation with the selected metal ions. The coloured species are stable over the period of 40 min to several hours making the methods more practicable. Moreover, no method involves any stringent reaction conditions.

The results of analysis of chromium and iron compared favorably with those of standard, the AAS methods. Hence, the proposed spectrophotometric methods could be adopted as alternatives to AAS methods for routine analysis as the AAS methods are cumbersome.

The utility of the so developed spectrophotometric methods has been well demonstrated by analyzing different samples; for instance, alloy and soil samples for chromium, vanadium and molybdenum; ore, cement, pharmaceutical
preparations, plant material and food stuff for iron, and various alloys for tungsten, gold and cerium.

The suitability of the proposed spectrophotometric methods has been investigated by analyzing the selected metal ions in presence of commonly associated metal ions. It is evident from the data presented in appropriate chapters that many cations and anions do not interfere with the determinations even if they are present in large excess.

The results of all the methods have been validated by statistical data treatment.

*The sensitivity, rapidity, simplicity and reproducibility* are the special features of the developed methods compiled in this thesis.

In view of the results presented in this thesis, the investigator hopes that the proposed spectrophotometric procedures could safely be used as better alternatives to the existing methods for the determination of selected metal ions even if they are present at trace levels in different samples.