Contents

Certificate of the Supervisor..... i
Acknowledgements..... ii-iii
Contents..... iv-v
List of Publications..... vi
Enclosure: Published Papers.....
Chapter I
Necessity of the Research Work..... 1-10
1.1. Summary of the work done..... 1-5
1.2. Object and application of the work..... 5-7
1.3. Choice of the main solvents used..... 7-8
References..... 9-10
Chapter II
General Introduction..... 11-55
2.1. Viscous antagonism and Synergy based Viscosity and density measurement..... 13-14
2.2. Viscosity..... 14-27
2.3. Conductance..... 27-39
2.4. Apparent and Partial Molar Volumes and Apparent Molal Adiabatic Compressibility..... 39-43
2.5. Some recent Trends in Solvation Model..... 44
References..... 45-55
Chapter III
Experimental Section..... 56-60
3.1. Chemical used: Their Sources and Purification..... 56-57
3.2. Experimental Techniques..... 57-60
References..... 60
Chapter IV
Densities, Viscosities and Adiabatic Compressibilities of Some Mineral Salts in Water at Different Temperatures..... 61-80
4.1. Introduction..... 61-62
4.2. Experimental..... 62
4.3. Results and Discussion..... 63-66
References..... 66-68
Tables..... 69-77
Graphs..... 78-80
Chapter V
Investigations of Viscous Antagonism of Binary Liquid Mixtures in the Temperature Range 303.15 to 323.15 K..... 81-94
5.1. Introduction..... 81
5.2. Theoretical Considerations..... 81-83
5.3. Experimental..... 83
5.4. Results and Discussion..... 83-84
References..... 84-86
Tables..... 87-90
Graphs..... 91-94

Chapter VI
Thermodynamics, Transport Properties and Ultrasonic Speeds of Some Bromide Salts in Methanol at Different Temperatures..... 95-118
6.1. Introduction..... 95-96
6.2. Experimental..... 96-97
6.3. Results and Discussion..... 97-100
References..... 100-102
Tables..... 103-115
Graphs..... 116-118
Chapter VII
Conductance Studies of Some Ammonium and Tetraalkyammonium Halides in Dimethyl Sulfoxide and Its Aqueous Binary Mixtures at 303.15 K..... 119-143
7.1. Introduction..... 119
7.2. Results and Discussion..... 120-123
7.3. Experimental..... 123-124
References..... 124-125
Tables..... 126-134
Graphs..... 135-143
Chapter VIII
Studies on the Densities, Viscosities and Adiabatic Compressibilities of Some Mineral Salts in Aqueous Binary Mixture of Tetrahydrofuran at Different Temperatures..... 144-184
8.1. Introduction..... 144-145
8.2. Results and Discussion..... 145-151
8.3. Experimental..... 151-152
References..... 152-154
Tables..... 155-175
Graphs..... 176-184
Chapter IX
Excess Molar Volume, Excess Energy and Viscosity Deviation of Binary Mixtures of Tetrahydrofuran with Some Hydrocarbons at Various Temperatures..... 185-205
9.1. Introduction..... 185-186
9.2. Experimental..... 186
9.3. Results and Discussion..... 187-189
References..... 189-191
Tables..... 192-196
Graphs..... 197-205
Chapter X
Studies on Viscous Synergy of Water in Tetrahydrofuran, 1, 4 Dioxane and Monoalcohol Mixtures and Its Relation to Concentration..... 206-233
10.1. Introduction..... 206-207
10.2. Experimental..... 207
10.3. Results and Discussion..... 208-211
References..... 211-213
Tables..... 214-226
Graphs..... 227-233
Chapter XI
Concluding Remarks..... 234-238