

# CONTENTS

<b>Topic</b>	<b>Page No.</b>
Acknowledgement	i-ii
Content	iii-vi
<b>CHAPTER I</b>	
<b>Object and Application of the Research Work</b>	<b>1-15</b>
1.1. Object and Application of the Research Work	1-4
1.2. Importance and Scope of Physico-chemical Parameters	4-6
1.3. Importance of Solvents used	6-8
1.4. Method of Investigations	8-9
1.5. Summary of the Works done	9-12
References	13-15
<b>CHAPTER II</b>	
<b>General Introduction</b>	<b>16-72</b>
2.1. Ion-Solvent Interaction	16-18
2.2. Ion-Ion Interaction	18-19
2.3. Theory of Mixed Solvents	19-21
2.4. Density	21-25
2.5. Viscosity	25-40
2.6. Ultrasonic Speed	40-42
2.7. Correlating Equations	42-44
2.8. Conductance	44-58
2.9. Solvation Model-Some Recent Trends	58-59
2.10. Conductance-Some Recent Trends	59-60
References	60-72
<b>CHAPTER III</b>	
<b>Experimental Section</b>	<b>73-84</b>
3.1. Source and Purification of the Chemicals used	73-76
3.2. Experimental Methods	76-83
References	84
<b>CHAPTER IV</b>	
<b>Partial Molar Volumes, Viscosity B-Coefficients, and Adiabatic Compressibilities of Sodium Molybdate in Aqueous 1,3-Dioxolane Mixtures from 303.15 to 323.15 K*</b>	<b>85-100</b>
4.1. Introduction	85
4.2. Experimental Section	85-87
4.3. Results and Discussion	87-90
4.4. Conclusion	91
References	91-92
<b>Contd..</b>	

## CONTENTS

<b>Topic</b>	<b>Page No.</b>
Tables	93-100
<i>*Published in International Journal of Thermophysics</i>	
<b>CHAPTER V</b>	
<b>Apparent molar volumes and viscosity B-coefficients of Some Amino Acids in Aqueous Tetramethylammonium Iodide Solutions at 298.15 K*</b>	<b>101-117</b>
5.1. Introduction	101
5.2. Experimental Section	102-103
5.3. Results and Discussion	103-108
5.4. Conclusion	108-109
References	109-110
Tables	111-116
Figures	117
<i>*Accepted for publication in Journal of Chemical Engineering &amp; Data</i>	
<b>CHAPTER VI</b>	
<b>Excess Molar Volumes, Viscosity Deviations and Ultrasonic Speeds of Sound of Binary Mixtures of 2-Butanone with Some Alkoxyethanols and Amines at 298.15 K*</b>	<b>118-148</b>
6.1. Introduction	118-119
6.2. Experimental Section	119-120
6.3. Results and Discussion	120-127
6.4. Conclusion	127-128
References	128-129
Tables	130-142
Figures	143-148
<i>*Published in Journal of Molecular Liquids</i>	
<b>CHAPTER VII</b>	
<b>Thermophysical Properties of Binary Mixtures of N, N- Dimethylformamide with Isomeric Butanols at 298.15, 308.15, and 318.15 K*</b>	<b>149-163</b>
7.1. Introduction	149
7.2. Experimental Section	149-150
7.3. Results and Discussion	150-154
7.4. Conclusion	154
References	154-155
Tables	156-161
Figures	162-163
<i>*Published in Journal of Indian Chemical Society</i>	

**Contd...**

## CONTENTS

<b>Topic</b>	<b>Page No.</b>
<b>CHAPTER VIII</b>	
<b>Electrical Conductances of Some Ammonium and Tetraalkylammonium Halides in Aqueous Binary Mixtures of 1,4-Dioxane at 298.15 K<sup>*</sup></b>	<b>164-175</b>
8.1. Introduction	164
8.2. Experimental Section	164-165
8.3. Results and Discussion	165-169
8.4. Conclusion	169
References	170
Tables	171-175
<i>*Published in Pakistan Journal of Scientific and Industrial Research</i>	
<b>CHAPTER IX</b>	
<b>Ion-Solvent and Ion-Ion Interactions of Sodium Molybdate in Aqueous Binary Mixtures of 1,4-Dioxane at Different Temperatures<sup>*</sup></b>	<b>176-191</b>
9.1. Introduction	176
9.2. Experimental Section	177-178
9.3. Results and Discussion	178-182
9.4. Conclusion	182
References	183
Tables	184-190
Figures	191
<i>*Published in Physics and Chemistry of liquids</i>	
<b>CHAPTER X</b>	
<b>Excess Molar Volume and Viscosity Deviations of Binary Liquid Mixtures of 1,3-Dioxolane and 1,4-Dioxane with Butyl acetate, Butyric Acid, Butylamine and 2-Butanol at 298.15 K<sup>*</sup></b>	<b>192-206</b>
10.1. Introduction	192
10.2. Experimental Section	192-193
10.3. Results and Discussion	193-197
10.4. Conclusion	197
References	197-198
Tables	199-202
Figures	203-206
<i>*Published in Journal of Chemical Engineering &amp; Data</i>	
<b>Contd...</b>	

## CONTENTS

<b>Topic</b>	<b>Page No.</b>
<b>CHAPTER XI</b>	
<b>Studies on Excess Molar Volumes and Viscosity Deviations of Binary Mixtures of Butylamine and N, N- dimethylformamide with Some Alkyl Acetates at 298.15 K*</b>	<b>207-223</b>
11.1. Introduction	207
11.2. Experimental Section	207-208
11.3. Results and Discussion	208-212
11.4. Conclusion	212
References	212-213
Tables	214-219
Figures	220-223
<i>*Published in Indian Journal of Chemistry Sec A</i>	
<b>CHAPTER XII</b>	
<b>Conductometric Study of Some Metal Halides in Glycerol + Water Mixtures*</b>	<b>224-237</b>
12.1. Introduction	224
12.2. Experimental Section	224-225
12.3. Results and Discussion	225-229
12.4. Conclusion	229
References	229-230
Tables	231-237
<i>*Published in International Journal of Thermophysics</i>	
<b>CHAPTER XIII</b>	
<b>Concluding Remarks</b>	<b>238-240</b>
<b>APPENDIX</b>	
1. List of Publications	241
2. Seminar/Symposium/Convention attended	242