

CONTENTS

| | Page |
|--|-------|
| CHAPTER 1 : Scope and Object of the Work | 1 |
| 1.1 Choice of the solvents used | 2 |
| 1.2 Scope of the work | 4 |
| 1.3 Methods of investigations | 4 |
| 1.4 Summary of the work done | 6 |
| References | 9 |
| CHAPTER II : General Introduction | 10-46 |
| 2.1 The Importance of Solution Chemistry | 10 |
| 2.2 Viscosity | 12 |
| 2.3 Conductance | 18 |
| 2.4 Apparent and Partial Molar Volumes | 27 |
| 2.5 Ultrasonic Velocity | 30 |
| 2.6 Some recent trends in solvation models | 32 |
| 2.7 A brief literature survey of the solvents used for investigation. | 33 |
| References | 38 |
| CHAPTER III : Experimental Section | 47-55 |
| 3.1 Chemicals used : Their sources and purification | 47 |
| 3.2 Experimental techniques | 50 |
| References | 55 |

CHAPTER IV 56-82

Section A : Conductance of Some 1:1 Electrolytes in
N,N-Dimethylacetamide at 298.15K. 56

Section B : A Study on volumetric and compressibility
Properties of some lithium salts in N,N-
Dimethylacetamide at 298.15K. 62

Section C : Spectral measurements of some lithium salts
in N,N-Dimethylacetamide. 69

References 72

Tables 75

CHAPTER V 83-112

Section A :Electrical conductance of some tetraalkyl-
ammonium and alkali salts in N,N-
Dimethylacetamide at 298.15K. 83

Section B : Viscosities of some tetraalkylammonium and
alkali salts in N,N-Dimethylacetamide at 298.15K. 88

Section C: Ultrasonic velocities and isentropic
compressibilities of some symmetrical tetra-
alkylammonium salts in N,N-Dimethylacetamide
at 298.15K. 95

References 100

Tables 103

| | |
|---|---------|
| CHAPTER VI | 113-123 |
| Electrical conductances of some alkali metal salts in N,N-Dimethylacetamide – water mixture at 298.15K. | 113 |
| References | 118 |
| Tables | 119 |
| CHAPTER VII | 124-155 |
| Section A : Viscosities and electrical conductances of some tetraalkylammonium and common ions in aqueous binary mixtures of N,N-Dimethylacetamide at 298.15K. | 124 |
| Section B : Ultrasonic velocities and isentropic compressibilities of some symmetrical tetraalkylammonium and alkali-metal salts in N,N-Dimethylacetamide – water mixture at 298.15K. | 133 |
| References | 141 |
| Tables | 143 |
| CHAPTER VIII | 155-178 |
| Section A: Excess molar volumes and viscosity deviations in binary mixtures of N,N-Dimethylacetamide with formamide and N,N-Dimethylformamide at (298.15, 308.15 and 318.15)K | 155 |
| Section B : Molecular interaction study in binary mixtures of N,N-Dimethylacetamide with 2-ethoxyethanol at three different temperatures. | 162 |
| References | 168 |
| Tables | 170 |
| CHAPTER IX :Concluding Remarks | 179-182 |