

C O N T E N T S

CHAPTER – I : INTRODUCTION TO FERRITES

1.1	Introduction	1
1.2	Structure of Ferrites	2
1.3	Spinel Structure	3
1.4	Classification of Spinel Ferrites	5
1.5	Types of Ferrites	7
1.6	Electrical Properties of Ferrites	8
1.7	Magnetic Properties of Ferrites	11
1.8	Dielectric Properties of Ferrites	14
1.9	Theories of Ferrimagnetism	16
1.10	Applications of Ferrites	25
1.11	Orientation of the Problem	26
	References	30

CHAPTER – II : SYNTHESIS AND CHARACTERIZATION

OF FERRITES

PART – A : SYNTHESIS OF FERRITES

	Introduction	35
2.A.1	Methods of Ferrite Preparation	36

2.A.2	Sintering	38
2.A.3	Actual Method of Preparation of Ferrites	43

**PART – B : CHARACTERIZATION BY X-RAY
DIFFRACTION**

	Introduction	45
2.B.1	Experimental Methods of X-ray diffraction	46
2.B.2	Experimental Techniques	49
2.B.3	Results and Discussion	52

PART – C : IR STUDIES

	Introduction	70
2.C.1	Experimental Techniques	74
2.C.2	Results and Discussion	74
	References	83

CHAPTER – III : D. C. ELECTRICAL RESISTIVITY

	Introduction	86
3.1	Conduction in Oxides	88
3.2	Conduction in Ferrites	89
3.3	Experimental Techniques	93
3.4	Results and Discussion	93
	References	103

CHAPTER – IV : MAGNETIC PROPERTIES

PART – A : HYSTERESIS STUDIES

	Introduction	104
4.A.1	Models of Magnetization	106
4.A.2	Magnetization in Ferrites	108
4.A.3	Magnetization Process	109
4.A.4	Magnetic Hysteresis	111
4.A.5	Experimental Techniques	112
4.A.6	Results and Discussion	118

PART- B : INITIAL PERMEABILITY

	Introduction	126
4.B.1	Models of Permeability	128
4.B.2	Dependence of Initial Permeability	133
4.B.3	Experimental Techniques	136
4.B.4	Results and Discussion	137
	References	142

CHAPTER – V : SUMMARY AND CONCLUSIONS 145