

## CONTENTS

	<u>TITLE</u>	<u>PAGE</u>
<b><u>CHAPTER - I</u></b>		
1.0	Importance of Ferrites	01
1.1	Historical development	03
1.2	Structure of ferrites	06
1.3	Spinel structure	06
1.4	Classification of ferrites	08
1.4.1	Normal spinel ferrites	
1.4.2	Inverse spinel ferrites	
1.4.3	Random spinel ferrites	
1.5	Review of work done on Initial permeability ( $\mu_i$ )	09
1.6	Theory of Initial permeability	12
1.6.1	Permeability mechanism	13
1.6.2	Temperature dependence	14
1.6.3	Disaccommodation	
1.7	Applications based on permeability for Ni - Zn ferrites	16
1.8	Orientation of work	17
<b><u>REFERENCES :</u></b>		19
<b><u>CHAPTER - II</u></b>		
PREPARATION AND CHARACTERIZATION		21
2.0	Introduction	
<b><u>SECTION - A :</u></b>		
2.1	Methods of ferrite preparation	21
2.2	Sintering	24
2.3	Actual method of preparation of ferrite samples	25
<b><u>SECTION - B :</u></b>		
2.4	X- Ray diffraction : Introduction & Principles	27
2.5	Experimental methods of X-ray diffraction	28
2.6	Experimental technique	29
2.7	Result & discussion	30
<b><u>REFERENCES :</u></b>		34

**CHAPTER - III**

**MAGNETIC PROPERTIES :**

3.0	Introduction	36
-----	--------------	----

**SECTION - A :**

3.1	Magnetisation in ferrites	37
-----	---------------------------	----

3.2	Magnetic anisotropy	38
-----	---------------------	----

3.3	Magnetostriction	39
-----	------------------	----

3.4	Magnetization process	40
-----	-----------------------	----

3.5	Hysteresis loop & domainstate	41
-----	-------------------------------	----

3.6	Experimental	42
-----	--------------	----

3.7	Result & Discussion	45
-----	---------------------	----

<b><u>REFERENCES :</u></b>		47
----------------------------	--	----

**SECTION - B :**

3.8	A. C susceptibility : Introduction	48
-----	------------------------------------	----

3.9	Experimental	49
-----	--------------	----

3.10	Result & Discussion	50
------	---------------------	----

<b><u>REFERENCES :</u></b>		52
----------------------------	--	----

**SECTION - C :**

3.11	Initial permeability : Introduction	53
------	-------------------------------------	----

3.12	Experimental	54
------	--------------	----

3.13	Result & Discussion	54
------	---------------------	----

<b><u>REFERENCES :</u></b>		57
----------------------------	--	----

**CHAPTER - IV**

4.1	Microstructure : Introduction	58
-----	-------------------------------	----

4.2	Microstructure and ferrites	58
-----	-----------------------------	----

4.3	Aspects of Microstructure	59
-----	---------------------------	----

4.4	Experimental	62
-----	--------------	----

4.5	Result & Discussion	63
-----	---------------------	----

<b><u>REFERENCES :</u></b>		65
----------------------------	--	----

**CHAPTER - V**

SUMMARY AND CONCLUSION	66
------------------------	----