

CONTENTS

CHAPTER NO.	TITLE	PAGE
I	INTRODUCTION TO IONOSPHERE	
1.0	Discovery of Ionosphere	1
1.1	Chapman Theory of Ionospheric Layer Formation	2
1.2	Structure of Ionosphere	8
1.3	Relation of Critical Frequency to Electron density	10
1.4	Appleton Hartee Formula of Refractive Index	11
II	GROUND BASED TECHNIQUES OF IONOSPHERIC EXPLORATION	
2.0	Introduction	14
2.1	Fixed Frequency Studies	15
2.2	Swept Frequency Studies	23
2.3	Analog Ionosonde	32
2.4	Description of Analog Ionosonde	32
2.4.1	Characteristics	32
2.4.2	Principle of Operation	34
2.4.3	Visual Display	38
2.4.4	Recording Mode	38
2.5	Digital Ionosonde	39

	2.6	Definition of Problem	40
III		PC AND ITS INTERFACING WITH IONOSONDE	
	3.0	Introduction	43
	3.1	Hardware : Personal Computer	44
	3.2	12 Bit High Performance A/D - D/A Card	48
	3.3	Microprocessor based Signal Simulation (Subsystem)	53
IV		DESCRIPTION OF SOFTWARE AND ITS OPERATION	
	4.0	Introduction	64
	4.1	Nature of Signal	64
	4.2	Special Investigation with 'A' / 'B' Scope	67
	4.3	Automatic Mode of Operation	77
V		SUMMARY AND CONCLUSION	93
