

CONTENTS

CHAPTER No.	TITLE	PAGE No.
1	A REVIEW OF RAY ANALYSIS OF PLANAR OPTICAL WAVEGUIDES	01 - 15
	1.1 Introduction	01
	1.2 Thin Films	02
	1.2.1 Optical Coatings	03
	1.2.2 Thin Film Light Guides	04
	1.3 Ray Paths in Planar Optical Waveguides	05
	1.4 Ray Paths in Square Law Media	07
	1.5 Summary	10
	1.6 References	12
	1.7 Figures	14 - 15
2	THE MODAL ANALYSIS OF INHOMOGENEOUS PLANAR WAVEGUIDES	16 - 46
	2.1 Maxwell's Equations	16
	2.2 Plane Electromagnetic Waves in Unbounded Media	17
	2.3 Plane Polarised Waves	21
	2.4 Reflection at a Plane Interface	23
	2.5 Total Internal Reflection	25
	2.6 Modal Analysis of Planar Waveguides	25
	2.7 TE Modes of a Symmetric Step Index Planar Waveguide	30
	2.8 Summary	41
	2.9 References	42
	2.10 Figures	43 - 46

CHAPTER No.	TITLE	PAGE No.
3	THE MODE TREATMENT OF A PLANAR PARABOLIC INDEX WAVEGUIDE	47 - 82
	3.1 Introduction	47
	3.2 Two Dimensional Parabolic Index Media	48
	3.2.1 Electromagnetic Mode Treatment of Parabolic Index Media	50
	3.2.2 TE Solutions	51
	3.3 Electromagnetic Mode Treatment of Parabolic Index Medium with Flat Continuation (PRESENT WORK)	54
	3.3.1 Expression for the Refractive Index Profile	54
	3.3.2 Electromagnetic Mode Analysis	56
	3.4 Results and Discussions	59
	3.5 Summary	62
	3.6 References	64
	3.7 Tables	65 - 70
	3.8 Figures	71 - 82
4	A STUDY OF NON-LINEAR SURFACE WAVES IN A THREE LAYERED WAVEGUIDE STRUCTURE (PRESENT WORK)	83 - 103
	4.1 Introduction	83
	4.2 Analysis of Surface Waves : Tomlinson's Method	84
	4.2.1 For an Interface Between a Linear Medium and a Positive Nonlinear Medium	84
	4.2.2 Critical Power of the Surface Wave	88

CHAPTER No.	TITLE	PAGE No.
	4.2.3 Comparison of the Expression for the Power	89
	4.2.4 An Interface Between the Linear Medium and the Negative Nonlinear Medium	91
	4.2.5 Critical power of the Surface Wave	92
	4.3 Results and Discussion	93
	4.4 Summary	97
	4.5 References	98
	4.6 Tables	99 - 100
	4.7 Figures	101- 103