CONTENTS

CHAPTER NO.		TITLE	PACE
i	INTRODUCTION TO DSP		
	1.1	Historical About the Subject	7
	1.2.1	Advantages of DSP	8
	1.2.2	Limitations of DSP	8
	1.2.3	Applications of DSP	10
	1.3	Architectural Review of Chips for DSP	12
	1.3.1	TMS 320 Family	13
	1.3.2	DSP 2100	14
	1.3.3	Motorola's DSP 56001	14
	1.3.4	Vector Signal Processor (VSP)	15
	1.3.5	Cascadable Signal Processor	16
	1.3.6	Future Trends	16
	1.4	Orientation of the Work	17
11	THEORY	OF DIGITAL FILTERS	•
	2.1	Basic Elements of Digital Filters	21
	2.2.1	Applications of Digital Filters	21
	2.2.2	Advantages and Limitations of Digital Filters	23
	2.3	Limitations	23
	2.4	Digital Filter Structures	24
	2.4.1	Direct Form-I	26
	2.4.2	Direct Form-II	27
	2.4.3	Cascade Combination of Second Order Sections	29
			contd

CONTENTS

CHAPTER NO.		TITLE	PACE
	2.4.4	Parallel Combination of Second Order Sections	32
	2.5	Design Methods for Digital Filters	33
	2.5.1	Impulse Invariance Method	33
	2.5.2	Bilinear Transform Method	36
111	DESIGN	TECHNIQUES FOR DIGITAL FILTERS	
	3.1	Bilinear Transform Design Method	42
	3.1.1	Design of Low Pass Filter Using BLT Method	42
	3.1.2	Design of High Pass Filter Using BLT Method	45
	3.1.3	Design of Band Pass Filter Using BLT Method	49
	3.1.4	Design of Band Stop Filter Using BLT Method	53
	3.2	Development of Program for Simulation of Low Pass & High Pass Filters	58
	3.3	Development of Program for Simulation of Band Pass & Band Stop Filters	60
	3.4	Program Description and Features	61
	3.5	Listing of the Program	63
IV	IMPLEMENTATION OF DIGITAL FILTERS		
	4.1	Building Blocks of Digital Filter	100
	4.2	Hardware Used for Digital Filtering	101
	4.3	Implementation of Digital Filter Designed by BLT Method on µp Based	
		System	103
			contd.

CONTENTS

CHAPTE NO	R	TITLE	PAGE
	4.4	Design and Implementation of LPF Using Numerical Solution of Differential Equation on μp Based System	114
V	SUMMA	ARY AND CONCLUSIONS	120