

(i)

INDEX

Chapter	Title	Page
I	INTRODUCTION	1
II	ESTIMATION TECHNIQUES : PAST & PRESENT	10
	2.1 General	11
	2.2 Modern Design Approach	14
	2.3 Estimation	18
	2.4 Impulse Response Identification	22
	2.4A Cross-Correlation Identification	22
	2.4B Identification from Sampled Input- Output Data	23
	2.4C Matched Filter Identification	26
	2.5 Estimation of a Differential Equation or a Transfer Function Model	29
	2.5A Estimation as Parameter Tracking Employing a Physical Model	30
	i) Parameter Perturbation	30
	ii) Input Signal Perturbation	32
	iii) Parameter Tracking Using Normal Input-Output Record.	33
	2.5B Estimation Employing Mathematical Models	34
	i) Statistical Methods	35
	ii) Quasilinearization Technique	45
	iii) Dynamic Programming	47
	iv) Estimation as a TPEV Problem	50
	v) Miscellaneous Methods	51
	2.5C Estimation Schemes : Sequential Versus Nonsequential	53
III	ESTIMATION AS A TWO POINT BOUNDARY VALUE PROBLEM AND ITS SOLUTION BY STEEPEST DESCENT METHOD	59
	3.1 Problem Statement	60
	3.2 Estimation as a TPEV Problem	61
	3.3 Solution of the TPEV Problem by steepest Descent Method	65

(ii)

	3.4 Computational Procedure	70
IV	ESTIMATION OF THE OPEN-LOOP TRANSFER FUNCTION OF THE TURBO-ALTERNATOR	75
	4.1 Description of the Plant	76
	4.2 State Variable Formulation	79
	4.3 Estimation Scheme	81
	4.4 Estimation from Input-Output Record of a Computer-Simulated System Similar to Open-loop Plant	86
	4.5 Estimation from Actual Operating Data of the Open-loop Plant	98
V	ESTIMATION OF THE SECOND ORDER CLOSED-LOOP TRANSFER FUNCTION OF THE TURBO-ALTERNATOR	107
	5.1 State Variable Formulation	120
	5.2 Estimation Scheme	124
	5.3 Estimation From Input-Output Record of a Computer-Simulated System Similar to the Second Order Closed-loop Plant	129
	5.4 Estimation from Actual Operating Data of the Closed-loop Plant	133
VI	ESTIMATION OF THE THIRD ORDER CLOSED-LOOP TRANSFER FUNCTION OF THE TURBO-ALTERNATOR	135
	6.1 State Variable Formulation	136
	6.2 Estimation Scheme	140
	6.3 Estimation from Input-Output Record of a Computer-Simulated System Similar to the Third Order Closed-loop Plant	145
	6.4 Estimation from Actual Input-Output Data	148
VII	IDENTIFICATION OF SYSTEM CHARACTERISTICS FROM NORMAL OPERATING DATA USING THE DELAY LINE SYNTHESIZER PRINCIPLE	156
	7.1 Introduction	157
	7.2 Computational Scheme for Cross-Correlation	159
	7.3 Identification Scheme	161
	7.4 Numerical Results	166

VIII	CONCLUSIONS	177
	APPENDICES	181
	Appendix A	182
	Appendix B	194
	REFERENCES	197