

# Contents

Preface	7
Chapter 1. The Behaviour of Linear Systems with Constant Elements on the Positive Time Axis-Classical Approach	
1.0 Introductory Considerations	9
1.1 Definition and Existence of the Solution	11
1.2 The Dependence of the Solution on the $f(t)$	18
1.3 Physical Significance of Results of Sections 1.1 and 1.2	23
Chapter 2. Function Theory-Properties of a Class of Matrices	
2.0 Introduction	28
2.1 Properties of Matrices Belonging to $\mathfrak{C}_n$ or $\mathfrak{P}_n$	29
Chapter 3. The Behaviour of Linear Systems with Constant Elements on the Positive Time Axis-General Approach	
3.0 Introduction	36
3.1 Schwartz Distributions	37
3.2 Distributions Having Laplace Images	53
3.3 Definition and Properties of a Solution	68
3.4 Passive Systems	75
3.5 Physical Meaning of Concepts and Results in Sections 3.1 to 3.4	79
Chapter 4. The Behaviour of Linear Systems with Constant Elements on the Entire Time Axis	
4.0 Introductory Considerations	82
4.1 Complex Distributions	83
4.2 Properties of Matrix Equation Solutions	92
4.3 Periodic Solutions	101
4.4 Physical Conclusions	110
Chapter 5. The Behaviour of Linear Systems with Time-Variable Elements	
5.0 Introduction	113
5.1 Properties of the Product $[Wx]$	115
5.2 Operators Defined on $D_n$	128
5.3 Quasinorm in Spaces $D_n$	137
5.4 Operators on the Space $D$	152
5.5 Generalized Heaviside Operators	173
5.6 A Generalization of Results Presented in Sections 5.1 to 5.5 with Applications to Systems of Linear Integro-differential Equations	177
5.7 Physical Interpretation of Results Obtained in Sections 5.1 to 5.6	185

Chapter 6. Non-canonic Systems	
6.0 Introduction	188
6.1 Auxiliary Theorem	189
6.2 Existence and Uniqueness of a Solution of Non-canonic Systems	192
6.3 Passive Systems	198
Chapter 7. General Properties of $m$ -Poles and $n$ -Ports	
7.0 Introduction	208
7.1 General $m$ -poles and $n$ -ports	208
7.2 Special Cases of $\mathcal{T}$ and $\mathfrak{M}$	219
7.3 The Generalized Thévenin Theorem	226
7.4 Stars and Polygons	231
7.5 Remarks on a Generalization of Results in Sections 6.1 to 6.4	238