

# CONTENTS

EDITORIAL PREFACE	vii
FOREWORD	ix
AUTHOR'S PREFACE	xiii

## PART I

### CONSTRUCTION OF NET EQUATIONS

Introduction	3
1. Absolutely unstable net equations	18
2. Six-point symmetric equation	22
3. Asymmetric net equations	29
4. Alternating method	43
5. Method of mean arithmetic, and multi-nodal symmetric method	52
6. Comparison between explicit and implicit equations, and the "implicitly-explicit" methods	64
7. Spherical and cylindrical regions	73
8. Equations of increased accuracy	83
9. Net equations with fictitious nodes	101
10. On bilateral approximations	108
11. Two-dimensional and three-dimensional equations	116
12. Two-dimensional and multi-dimensional net equations of increased accuracy	130
13. Non-uniform nets	147
14. Multi-step equations	153
15. General case of variable and discontinuous coefficients	162

16. Parabolic equations of higher than the second order	170
17. Non-linear equations	184
Conclusions	195

## PART II

## SOLUTION OF NET EQUATIONS

Introduction	203
1. "One-dimensional" elliptic net equations	206
2. Direct methods	212
3. Ill-conditioned net matrices	224
4. Simplest iterative method	230
5. Variational methods	241
6. Methods using Chebyshev polynomials	250
7. Iterative methods of the second degree	260
8. Iterative methods of the $n$ th degree	268
9. Methods of successive displacements	280
10. Methods of block iteration	299

## APPENDIX

On the application of Chebyshev polynomials to parabolic net equations	315
REFERENCES	321
INDEX	339
VOLUMES PUBLISHED IN THIS SERIES	345