

Table of Contents

Notation	XI
1. Dedekind Domains and Valuations	1
1.1. Dedekind Domains	1
1.2. Valuations and Exponents	16
1.3. Finitely Generated Modules over Dedekind Domains	24
1.4. Notes to Chapter 1	37
Exercises	40
2. Algebraic Numbers and Integers	43
2.1. Distribution of Integers in the Complex Plane	43
2.2. Discriminants and Integral Bases	52
2.3. Applications of Minkowski's Convex Body Theorem	66
2.4. Notes to Chapter 2	69
Exercises	82
3. Units and Ideal Classes	85
3.1. Valuations of Algebraic Number Fields	85
3.2. Ideal Classes	92
3.3. Units	96
3.4. Euclidean Algorithm	115
3.5. Notes to Chapter 3	119
Exercises	132
4. Extensions	135
4.1. The Homomorphisms of Injection and Norm	135
4.2. Different and Discriminant	146
4.3. Factorization of Prime Ideals in Extensions. More about the Class Group	167
4.4. Notes to Chapter 4	185
Exercises	196

5. \mathfrak{p}-adic Fields	199
5.1. Principal Properties	199
5.2. Extensions of \mathfrak{p} -adic Fields	221
5.3. Harmonic Analysis in \mathfrak{p} -adic Fields	237
5.4. Notes to Chapter 5	250
Exercises	254
6. Applications of the Theory of \mathfrak{p}-adic Fields	257
6.1. Arithmetical Applications	257
6.2. Adeles and Ideles	286
6.3. Notes to Chapter 6	307
Exercises	312
7. Analytical Methods	313
7.1. The Classical Zeta-Functions	313
7.2. Asymptotic Distribution of Ideals and Prime Ideals	343
7.3. Chebotarev's Theorem	364
7.4. Notes to Chapter 7	389
Exercises	405
8. Abelian Fields	409
8.1. Main Properties	409
8.2. The Class-number Formula and the Siegel-Brauer Theorem	423
8.3. Class-number of Quadratic Fields	436
8.4. Notes to Chapter 8	459
Exercises	482
9. Factorizations	485
9.1. Elementary Approach	485
9.2. Quantitative results	496
9.3. Notes to Chapter 9.	507
Exercises	509
Appendix I. Locally Compact Abelian Groups	511
Appendix II. Function Theory	525
Appendix III. Baker's Method	527
Problems	529
References	535
Author Index	685
Subject Index	701
List of Symbols	707