

# Contents

<b>Preface</b>	<b>xi</b>
<b>Chapter 1. Crossed Products and Group-Graded Rings</b>	<b>1</b>
1. Crossed Products	1
2. Group-Graded Rings and Duality	10
3. Induced Modules	19
4. Maschke's Theorem	29
<b>Chapter 2. Delta Methods and Semiprime Rings</b>	<b>39</b>
5. Delta Methods	39
6. Coset Calculus	48
7. Minimal Forms	56
8. Sufficient Conditions	67
9. Polynomial Identities	74
<b>Chapter 3. The Symmetric Ring of Quotients</b>	<b>83</b>
10. The Martindale Ring of Quotients	83

11. Separated Groups	94
12. X-Inner Automorphisms	105
13. Free Rings	117
<b>Chapter 4. Prime Ideals – The Finite Case</b>	<b>131</b>
14. G-Prime Coefficients	131
15. Prime Coefficients	142
16. Finite Groups and Incomparability	151
17. Primeness and Sylow Subgroups	163
18. Semiprimeness and Sylow Subgroups	176
<b>Chapter 5. Prime Ideals – The Noetherian Case</b>	<b>187</b>
19. Orbitally Sound Groups	187
20. Polycyclic Group Algebras	197
21. Polycyclic Crossed Products	208
22. Jacobson Rings	220
23. P. I. Algebras	232
<b>Chapter 6. Group Actions and Fixed Rings</b>	<b>241</b>
24. Fixed Points and Traces	241
25. Integrality	254
26. Finiteness Conditions	264
27. Rings With No Nilpotent Elements	276
28. Prime Ideals and Fixed Rings	285
<b>Chapter 7. Group Actions and Galois Theory</b>	<b>297</b>
29. Traces and Truncation	297
30. The Galois Correspondence	309
31. Almost Normal Subgroups	319
32. Free Rings and Subrings	330

<b>Contents</b>	<b>ix</b>
<b>Chapter 8. Grothendieck Groups and Induced Modules</b>	<b>343</b>
33. Grothendieck Groups	343
34. Graded Rings	356
35. Group Extensions	367
36. The Induction Theorem	378
<b>Chapter 9. Zero Divisors and Idempotents</b>	<b>391</b>
37. Zero Divisors and Goldie Rank	391
38. The Zaleskii-Nerovskii Example	405
39. Almost Injective Modules	418
40. Stably Free Modules	430
<b>References</b>	<b>445</b>
<b>Index</b>	<b>459</b>