

Contents

	Page
1. Preliminaries	1
1.1 Introduction	1
1.2 Definitions and recapitulations	1
1.3 Modules	6
2. Flatness	16
2.1 Projective modules	16
2.2 Flat modules	18
2.3 Faithfully flat modules	24
3. Fractions	32
3.1 Rings, modules and algebras of fractions	32
3.2 Localisation	36
3.3 Projective modules and localisation	42
3.4 Submodules of fraction algebras	55
4. Supporting and associated prime ideals	61
4.1 Lengths and ranks of modules	61
4.2 The support of a module	64
4.3 Prime ideals associated to a module	66
5. Integers	72
5.1 Definition of integers	72
5.2 Integers and prime ideals	80

6.	Some geometrical results	85
7.	Valuation rings	89
	7.1 Ordered groups	89
	7.2 Valuation rings	90
	7.3 Extension theorems	94
	7.4 An application	99
8.	Prüfer and Dedekind rings	105
9.	General Exercises	113
	Appendix 1. Categories	116
	Appendix 2. The constructible topology	121
	Bibliography	124
	Indices	125