

Contents

1 Examples	1
1.1 Representation Groups.....	1
1.2 Other Examples	6
1.3 Biset Functors	9
1.4 Historical Notes.....	10
1.5 About This Book	10
 Part I General Properties	
2 G-Sets and (H, G)-Bisets	15
2.1 Left G -Sets and Right G -Sets	15
2.2 Operations on G -Sets	17
2.3 Bisets	18
2.4 Burnside Groups.....	28
2.5 Burnside Rings	31
3 Biset Functors	41
3.1 The Biset Category of Finite Groups	41
3.2 Biset Functors	43
3.3 Restriction to Subcategories	47
4 Simple Functors	53
4.1 Admissible Subcategories	53
4.2 Restriction and Induction.....	56
4.3 The Case of an Admissible Subcategory.....	58
4.4 Examples.....	69
 Part II Biset Functors on Replete Subcategories	
5 The Burnside Functor	75
5.1 The Burnside Functor.....	75
5.2 Effect of Biset Operations on Idempotents	76
5.3 Properties of the $m_{G,N}$'s	79

5.4	Subfunctors in Coprime Characteristic	83
5.5	Application: Some Simple Biset Functors	89
5.6	Examples	91
6	Endomorphism Algebras	97
6.1	Simple Modules and Radical	97
6.2	Idempotents	104
6.3	Faithful Elements	109
6.4	More Idempotents	111
6.5	The Case of Invertible Group Order	114
7	The Functor $\mathbb{C}R_{\mathbb{C}}$	121
7.1	Definition	121
7.2	Decomposition	124
7.3	Semisimplicity	130
7.4	The Simple Summands of $\mathbb{C}R_{\mathbb{C}}$	133
8	Tensor Product and Internal Hom	135
8.1	Bisets and Direct Products	135
8.2	The Yoneda–Dress Construction	136
8.3	Internal Hom for Biset Functors	139
8.4	Tensor Product of Biset Functors	140
8.5	Green Biset Functors	147
8.6	More on A -Modules	151
Part III p-Biset Functors		
9	Rational Representations of p-Groups	155
9.1	The Functor of Rational Representations	155
9.2	The Ritter–Segal Theorem Revisited	156
9.3	Groups of Normal p -Rank 1	158
9.4	The Roquette Theorem Revisited	162
9.5	Characterization of Genetic Subgroups	165
9.6	Genetic Bases	170
9.7	Genetic Bases and Subgroups	178
10	p-Biset Functors	183
10.1	Rational p -Biset Functors	183
10.2	Subfunctors of Rational p -Biset Functors	186
10.3	The Subfunctors of $R_{\mathbb{Q}}$	193
10.4	The Subfunctors of $R_{\mathbb{Q}}^*$	199
10.5	The Subfunctors of $kR_{\mathbb{Q}}$	202
10.6	A Characterization	206
10.7	Yoneda–Dress Construction	209

11 Applications	215
11.1 The Kernel of the Linearization	
Morphism	215
11.2 Units of Burnside Rings	223
12 The Dade Group	241
12.1 Permutation Modules and Algebras.....	242
12.2 Endo-Permutation Modules	243
12.3 Dade P -Algebras	248
12.4 Bisets and Permutation Modules.....	253
12.5 Bisets and Permutation Algebras	263
12.6 Relative Syzygies	272
12.7 A Short Exact Sequence of Biset Functors	275
12.8 Borel-Smith Functions	277
12.9 The Dade Group up to Relative Syzygies	283
12.10 The Torsion Subgroup of the Dade Group	291
References.....	293
Index	297