

Contents

<i>Preface</i>	ix
1 General representation theory	1
1 Basic concepts	1
2 Group rings, algebras and modules	6
3 Complete reducibility	12
4 Absolute irreducibility and the realisation of representations	15
5 Semisimple algebras	23
6 Clifford's theorem	27
7 Induced representations	32
8 Tensor induction and transfer	42
2 Complex characters	48
1 Basic properties	48
2 Burnside's $p^a q^b$ -theorem	61
3 The character ring: restriction and induction	63
4 Frobenius' theorem	69
5 Induction from normal subgroups	73
6 Frobenius groups	77
7 The special linear groups $SL(2, 2^n)$	80
8 The Frobenius–Schur indicator	85
9 Some counting methods	90
10 A characterisation of the groups $SL(2, 2^n)$	99
11 Rigidity in finite groups	104
3 Suzuki's theory of exceptional characters	107
1 Closed and special subsets	107
2 Suzuki's algorithm	115
3 The Brauer–Suzuki theorem	117
4 Strongly self-centralising subgroups	120
5 CA-groups of odd order	128
6 Groups with self-normalising cyclic subgroups	132

4	Coherence and exceptional characters	137
1	Coherence	137
2	Frobenius groups as normalisers of Hall subgroups	143
3	Sibley's theorems	153
4	CN-groups of odd order	164
5	Zassenhaus groups	168
5	The characterisation of characters	175
1	The structure of the character ring	176
2	The proofs of the theorems	178
3	The focal subgroup theorem	183
4	A splitting field	184
6	Isometries	187
1	Dade's isometry	188
2	Block theory	196
3	Groups with Sylow 2-subgroups isomorphic to $Z_{2^n} \times Z_{2^n}$	205
4	Blocks and exceptional characters	211
5	Principal 2-block of groups with dihedral Sylow subgroups	216
6	Groups with quaternion Sylow 2-subgroups	218
7	Some further isometries	221
	Appendix: Glauberman's Z^*-theorem	230
	<i>References</i>	234
	<i>Index of notation</i>	237
	<i>General index</i>	239