

CONTENTS

Preface	vii
Addresses of contributors	ix
List of participants	xi
PART I: THE LOCAL HOMOLOGICAL CONJECTURES, BIG COHEN-MACAULAY MODULES, AND RELATED TOPICS	
The syzygy problem: a new proof and historical perspective E.G. EVANS and PHILLIP GRIFFITH	2
The theory of homological dimensions of complexes HANS-BJØRN FOXBY	12
Complexes of injective modules HANS-BJØRN FOXBY	18
The local homological conjectures MELVIN HOCHSTER	32
The rank of a module G. HORROCKS	55
Modules of generalized fractions and balanced big Cohen-Macaulay modules R.Y. SHARP and H. ZAKERI	61
Sur la théorie des complexes parfaits L. SZPIRO	83
PART II: DETERMINANTAL IDEALS, FINITE FREE RESOLUTIONS, AND RELATED TOPICS	
Some exact complexes and filtrations related to certain special Young diagrams KAAN AKIN and DAVID A. BUCHSBAUM	92
The canonical module of a determinantal ring WINFRIED BRUNS	109
The MacRae invariant HANS-BJØRN FOXBY	121
Finite free resolutions and some basic concepts of commutative algebra D.G. NORTHCOTT	129

PART III: MULTIPLICITY THEORY, HILBERT AND POINCARÉ SERIES,
ASSOCIATED GRADED RINGS, AND RELATED TOPICS

Blowing-up of Buchsbaum rings SHIRO GOTO	140
Necessary conditions for an analytical algebra to be strict J. HERZOG	163
Multiplicities, Hilbert functions and degree functions D. REES	170
Finiteness conditions in commutative algebra and solution of a problem of Vasconcelos JAN-ERIK ROOS	179
On the use of graded Lie algebras in the theory of local rings JAN-ERIK ROOS	204
Reductions, local cohomology and Hilbert functions of local rings JUDITH D. SALLY	231
FURTHER PROBLEMS	243