

Table of Contents

| | |
|--|-----|
| Preface | v |
| <u>Chapter 1</u> : Local Algebra | |
| 1.1 . Noetherian and Coherent Rings | 1 |
| 1.2 . Local Rings | 4 |
| 1.3 . Flatness | 8 |
| 1.4 . Fitting's Invariants | 13 |
| <u>Chapter 2</u> : Homology of Local Rings | |
| 2.1 . Koszul Complexes | 16 |
| 2.2 . Depth | 19 |
| 2.3 . Macaulay Rings | 28 |
| 2.4 . Projective and Injective Dimensions | 33 |
| 2.5 . Euler Characteristics of Modules | 36 |
| 2.6 . Gorenstein Rings | 44 |
| Appendix . Rings of Type One | 52 |
| <u>Chapter 3</u> : Divisorial Ideals | |
| 3.1 . Composition in $\text{Id}(A)$ | 55 |
| 3.2 . Divisors | 63 |
| 3.3 . Modules of Dimension One | 72 |
| Appendix . Higher Divisorial Ideals | 80 |
| <u>Chapter 4</u> : Spherical Modules and Divisors | |
| 4.1 . A Theorem of Gruson | 82 |
| 4.2 . Change of Rings and Dimensions | 84 |
| 4.3 . Spherical Modules | 90 |
| 4.4 . Elementary Properties | 94 |
| 4.5 . Resolutions and Divisors | 98 |
| <u>Chapter 5</u> : I-divisors | |
| 5.1 . Construction | 104 |
| 5.2 . Euler Characteristics of $\text{Inj}(A)$ | 107 |
| 5.3 . Divisors on $\text{Inj}(A)$ | 109 |
| Bibliography | 117 |
| Index | 120 |