

## Contents

### I. Galois Objects

by Stephen U. Chase

|  |    |
|--|----|
| 0. Introduction and Preliminaries . . . . .                          | 4  |
| 1. Elementary Properties of Galois Objects . . . . .                 | 8  |
| 2. Adjointness and the Functor $E$ . . . . .                         | 14 |
| 3. Products of Galois Objects and the Functor $\mathbf{X}$ . . . . . | 21 |
| 4. Galois Algebras and Coalgebras . . . . .                          | 28 |
| 5. Triples, Extensions, and Cohomology . . . . .                     | 41 |

### II. Hopf Algebras and Galois Theory of Rings

by Stephen U. Chase and Moss E. Sweedler

|   |    |
|---|----|
| 6. Introduction . . . . .   | 52 |
| 7. Definitions, Theorems and Consequences . . . . .                   | 54 |
| 8. The Morita Correspondence . . . . .                                | 61 |
| 9. Elementary Properties of Hopf Algebras and Galois Objects. . . . . | 66 |
| 10. Subalgebras of Galois Objects . . . . .                           | 71 |
| 11. Proof of the Main Theorem . . . . .                               | 77 |
| 12. Flatness, and the Functor $\mathbf{X}$ . . . . .                  | 80 |

### III. Galois Objects and Extensions of Hopf Algebras

by Stephen U. Chase

|  |    |
|--|----|
| 13. Introduction . . . . .             | 84 |
| 14. Extensions of Presheaves . . . . . | 88 |

|                           |     |
|---------------------------|-----|
| 15. Extensions of Sheaves | 96  |
| 16. The Isomorphism       | 103 |
| 17. Some Special Cases    | 116 |
| Footnotes                 | 127 |
| Remarks                   | 131 |