

Contents

Part I. Discrete Parameter

§ 1. Fundamental definitions	1
§ 2. Transition probabilities	5
§ 3. Classification of states	12
§ 4. Recurrence	17
§ 5. Criteria and examples	21
§ 6. The main limit theorem	28
§ 7. Various complements	35
§ 8. Repetitive pattern and renewal process	41
§ 9. Taboo probabilities	45
§ 10. The generating function	54
§ 11. The moments of first entrance time distributions	61
§ 12. A random walk example	71
§ 13. System theorems	76
§ 14. Functionals and associated random variables	81
§ 15. Ergodic theorems	90
§ 16. Further limit theorems	99
§ 17. Almost closed and sojourn sets	112

Part II. Continuous Parameter

§ 1. Transition matrix: basic properties	119
§ 2. Standard transition matrix	128
§ 3. Differentiability	134
§ 4. Definitions and measure-theoretic foundations	140
§ 5. The sets of constancy	148
§ 6. Continuity properties of sample functions	157
§ 7. Further specifications of the process	160
§ 8. Optional random variable	165
§ 9. Strong Markov property	172
§ 10. Classification of states	182
§ 11. Taboo probability functions	187
§ 12. Last exit time	197
§ 13. Ratio limit theorems; discrete approximations	212
§ 14. Functionals	224
§ 15. Post-exit process	230
§ 16. Imbedded renewal process	239
§ 17. The two systems of differential equations	245
§ 18. The minimal solution	251
§ 19. The first infinity	257
§ 20. Examples	272
Bibliography	292
Index	298