Part A

This part provides the general framework for the theory of one-parameter semigroups of bounded linear operators on Banach spaces, with particular emphasis on structures relevant to positivity. Rather than offering a self-contained treatment, the focus is on fixing notation, recalling fundamental definitions and results, and collecting standard examples and constructions that recur throughout the book. Topics include the abstract Cauchy problem, perturbation and characterization results, as well as spectral and asymptotic theory. This material serves as foundation for the subsequent parts, where positivity plays a central role and the basic objects are Banach lattices.

Part B

This part is devoted to positive semigroups acting on spaces of continuous functions of type $C_0(X)$, X locally compact. Owing to their concrete structure as Banach lattices, these spaces provide an accessible and intuitive setting in which many fundamental phenomena of positive semigroups can be studied in detail. After fixing notation and reviewing the basic properties of $C_0(X)$ and $C(K)$, K compact, the theory develops characterizations of positive semigroups, their generators, and, as a special case, associated flows. Spectral and asymptotic properties, including stability, irreducibility, and compactness, are treated extensively. The results in this part serve both as a motivating model and as a testing ground for the more abstract theory developed later.

Part C

This part develops the theory of positive semigroups in the general setting of Banach lattices. It begins with a concise introduction to ordered Banach spaces and Banach lattices, emphasizing concepts and structural properties essential for the study of positivity. Classical function spaces such as $C(K)$ and L^p spaces serve as guiding examples, illustrating the close connection between abstract lattice theory and concrete models. Building on this foundation, the part presents characterization results for positive semigroups and their generators, domination and disjointness properties, as well as spectral and asymptotic theory. This framework unifies and extends the phenomena encountered already in the $C_0(X)$ setting.

Part D

This part is concerned with positive semigroups acting on C^*- and W^*-algebras and their preduals. It is an introduction to the theory of positive semigroups on operator algebras addressing similar subjects as in the parts B and C . After reviewing basic structural properties of semigroups on operator algebras, the focus shifts to positivity-preserving dynamics, spectral properties, and asymptotic behavior. Topics include characterization results on W^*-algebras, spectral theory on preduals, and stability and ergodic phenomena. This part extends the theory of positive semigroups on Banach lattices to a noncommutative setting.