Problem 1 Consider a Markov process with a countable state space $i = 1, 2, \ldots, n, \ldots$. Given the transition rates $q_{ij}$ of the process derive the expected time $1/\mu_i$ that the system stays in state $i$ and the probability $p_{ij}$ that the next state visited after state $i$ is state $j$.

Conversely, suppose you are given $\mu_i, p_{ij}$. Obtain the values of the rates $q_{ij}$.

Problem 2 Exercise 5.3 from Chapter 5.

Problem 3 Exercise 5.5 from Chapter 5.

Problem 4 Exercise 5.7 from Chapter 5.