

Numerical answers

1 (b) $p(C = 1 | LFT = 1, PCR = 0) \approx 0.3$

4 (b)

$$\begin{bmatrix} p(y_t = 1 | y_{t-1} = 1) & p(y_t = 1 | y_{t-1} = 2) & p(y_t = 1 | y_{t-1} = 3) \\ p(y_t = 2 | y_{t-1} = 1) & p(y_t = 2 | y_{t-1} = 2) & p(y_t = 2 | y_{t-1} = 3) \\ p(y_t = 3 | y_{t-1} = 1) & p(y_t = 3 | y_{t-1} = 2) & p(y_t = 3 | y_{t-1} = 3) \end{bmatrix} = \begin{bmatrix} 0.45 & 0.45 & 0.05 \\ 0.45 & 0.45 & 0.05 \\ 0.1 & 0.1 & 0.9 \end{bmatrix}$$

4 (c) Transition matrix as given in 4b above. Initial state distribution:

$$\begin{bmatrix} p(y_1 = 1) \\ p(y_1 = 2) \\ p(y_1 = 3) \end{bmatrix} = \begin{bmatrix} 0.25 \\ 0.25 \\ 0.5 \end{bmatrix}$$