

# Answers to Selected Problems

## Problem 2.1

(c)  $\mathbf{S} = (3, 2, 1)$ ,  $EBO(\mathbf{S}) = 0.1205$ ,  $C(\mathbf{S}) = 8,300$  Euros

## Problem 3.2

(c)  $(S_A, S_B) = (3, 3)$ ,  $\hat{C}(S_A, S_B) = 892.7$  Euros/month,  $W(S_A, S_B) = 0.1548$  days per demand

(d) Total average costs: 2,138 Euros/month, Increase: 388 Euros/month

## Problem 4.2

$\mathbf{h}^* = (0, 1)$ , 644.26 Euros/month

## Problem 4.3

(b)  $(0,0)$  is optimal for  $0.1304 \leq \alpha < 1$ ,  $(0,1)$  is optimal for  $0.0569 \leq \alpha \leq 0.1304$ ,  $(0,2)$  is optimal for  $0 < \alpha \leq 0.0569$

## Problem 5.1

(b)  $\pi(0,0) = \frac{2}{37}$ ,  $\pi(0,1) = \frac{5}{37}$ ,  $\pi(1,0) = \frac{5}{37}$ ,  $\pi(1,1) = \frac{25}{37}$

## Problem 5.2

(b)  $\pi(0,0) = 0.0881$ ,  $\pi(0,1) = 0.1444$ ,  $\pi(1,0) = 0.1976$ ,  $\pi(1,1) = 0.5699$

**Problem 5.5**

$$(b) \beta = \frac{2+4m+3m^2}{2+6m+9m^2+9m^3}, \theta = \frac{9m^3}{2+6m+9m^2+9m^3}, A = \frac{2m+6m^2}{2+6m+9m^2+9m^3}$$

**Problem 6.1**

- (a)  $\hat{S} = 4$ ,  $S_{\text{tot}}^{(1)} = 24$ , Corresponding mean waiting time: 0.0022 years  
(b) 0.0004 years  
(c) 7; 13; 11

**Problem 7.1**

$$W_{1,0}(\mathbf{S}) = 0.0203 \text{ months}$$

**Problem 8.2**

- (a)  $L^1 = 9$   
(b) The probabilities  $P_j^1(\mathbf{U}_3)$  for  $j = 0, \dots, 6$  are as follows: 0.11765, 0.10381, 0.09159, 0.08082, 0.07131, 0.06292, 0.05552  
(c) The probabilities  $P_j^2(\mathbf{U}_3)$  for  $j = 0, 1, 2$  are as follows: 0.4, 0.24, 0.144

**Problem 8.3**

- (c) 0.1322

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