Exam Questions/Data Analysis for Risk and Security Management *Prof. Dr. Dirk Drechsler*

#14 (Total 23 Points)

[1]

$$\lambda = 2,5; \ \mu = \frac{60}{10} = 6 \ customer \ per \ hour$$

$$L_q = \frac{\lambda^2}{\mu * (\mu - \lambda)} = \frac{2,5^2}{6 * (6 - 2,5)} = 0,2976$$

$$L = L_q + \frac{\lambda}{\mu} = 0,7143$$

$$W_q = \frac{L_q}{\lambda} = 0,1190$$

$$W = W_q + \frac{1}{\mu} = 0,2857$$

$$P_w = \frac{\lambda}{\mu} = 0,4167$$

[2]

0,119 (hours) are $\left(\frac{60}{100}\right) * 119 = 7,14$ minutes. No, not met. Therefore, increase mean service rate or hire a second consultant.

[3]

$$\mu = \frac{60}{8} = 7,5 \text{ customer per hour}$$

$$L_q = \frac{\lambda^2}{\mu * (\mu - \lambda)} = \frac{2,5^2}{7,5 * (7,5 - 2,5)} = 0,1667$$

$$W_q = \frac{L_q}{\lambda} = 0,0667 \text{ hours (4 minutes)}$$

The service goal is being met.