#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]

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

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

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

The service goal is being met.