ECSE 493 - Lab 1 Report

Isaac Chan

September 2018

1 Question 1

The equation of the DC-motor that is given in the description is described by

$$J_m\ddot{\theta} + (b + \frac{K_t K_m}{R_a})\dot{\theta} = \frac{K_t}{R_a} v_a \tag{1}$$

And the coefficients of each of the values are defined as

$$J_m = 0.01, b = 0.01, K_e = K_t = 0.02, R_a = 10 \tag{2}$$

Substituting this into the equations, we get

$$0.01\ddot{\theta} + 0.00104\dot{\theta} = 0.002 v_a \tag{3}$$

Applying a laplace transform, we get the following

$$0.01s^2 + 0.00104s = 0.002 \tag{4}$$