Assignment #2 : Design of a Servo Controller, and Analog Controller Implementation

Electronic Control Systems

Dept. of Electronic and Telecommunication Engineering, University of Moratuwa

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Q1 A DC motor has following parameters

L = 0.062	R = 2.5	
k_t = 0.026	k_b = 0.02	
n = 20	J_{eq} = 0.00004	b_{eq} = 0.001

Design a servo controller for the motor to achieve following performance

1. Controller bandwidth of 20rad/s
2. Phase margin of 50o
3. Unit step steady state error 0.01

Draw Bode plots at each design step. Simulate the servo motor and verify the motion control performance for a suitable reference position trajectory
[Note: The answer script should contain your manual work, m-codes, and MatLab figures]

Q2 Implement the analog controller using OpAmps. Draw the controller schematic only