Practice Final Exam – Simulation Results

ECEn 483/ ME 431

Winter 2025

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

At the end of the exam, print this file and stable it to the handout portion of the exam.

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| Part I (20pts) |  |
| Part II (20 pts) |  |
| Part III (25 pts) |  |
| Part IV (35pts) |  |
|  |  |
| Total: (100 pts) |  |

# Part 2. Design models

2.2 Insert plot of the output of the simulation model with initial condition  and input directly below this line.

# Part 3. PID Control

3.5 Insert a plot that shows both and when is a square wave with magnitude degrees and frequency 0.1 Hz, and when using a PD controller.

3.6 Insert a plot that shows both and when is a square wave with maginitude degrees and frequency 0.1 Hz, and when using a PID controller.

3.7 Insert the simulation code for the controller that implements PID control directly below this line.

# Part 4. Observer based control

4.2. Insert a plot of the step response of the system for the state space controller with an integrator.

4.5. Insert a plot of the step response of the system for the complete observer-based control.

4.6 Insert a plot of the state estimation error.

4.7 Insert a plot of the LQR-based response.

4.8 Insert the code for the controller below this line.

# 6. Insert your parameter file or any other code here that computes all control gains. Make sure to give a title or description before each file for clarity.