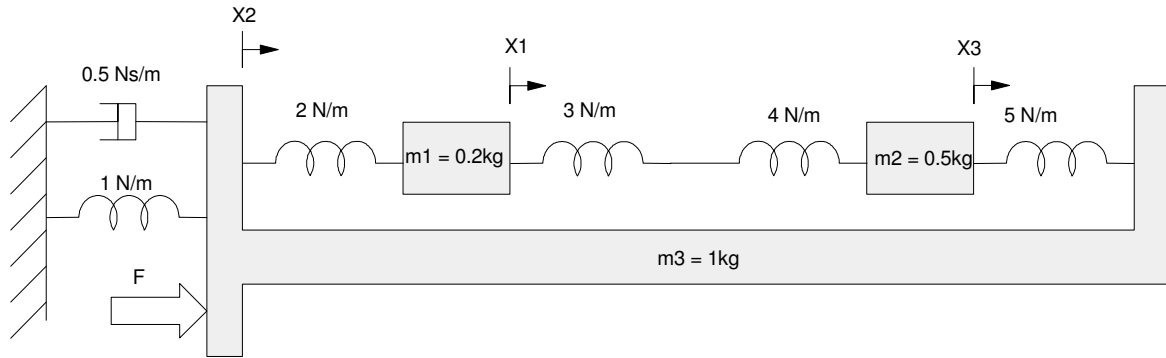# Homework #6: ECE 461/661

Mass-Spring Systems, Rotational Systems.   Due Monday, September 30th

Mass Spring systems

1) (20pt) Draw the circuit equivalent for the following mass-spring systems.
- Express the dynamics in state-space form
- Find the transfer function from F to X2
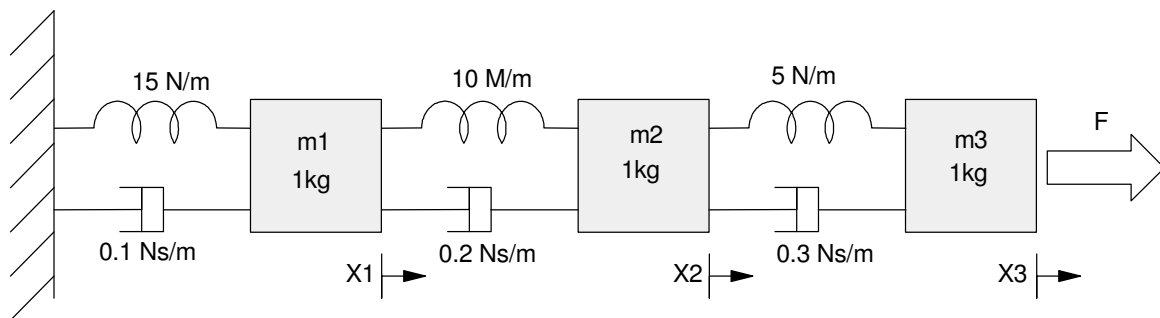- Plot the step response from F to X2

Problem 1

2) (20pt) Draw the circuit equivalent for the following mass-spring systems.
- Express the dynamics in state-space form
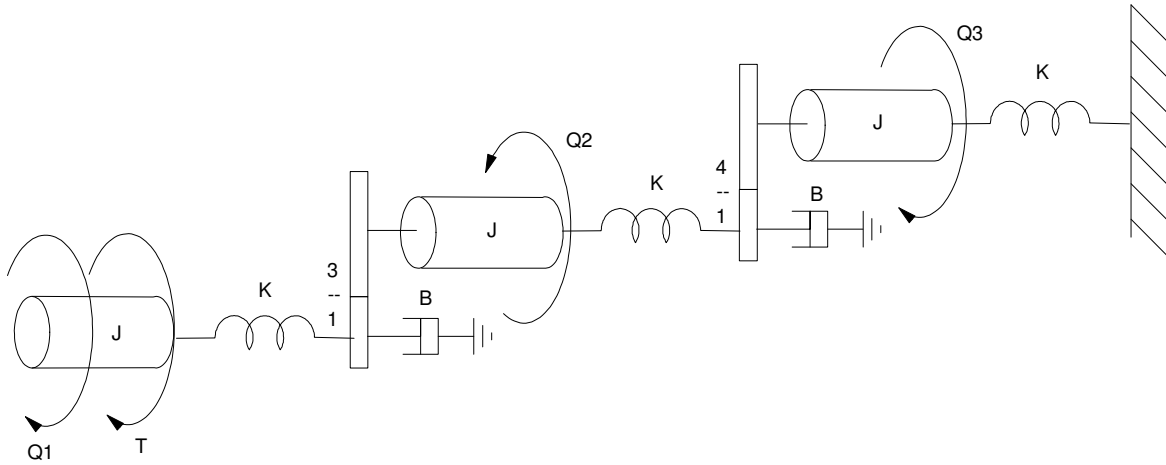- Find the transfer function from F to X3

Plot the step response from F to X3

Rotational Systems

3) Draw the circuit equivalent for the following rotational system.

- Express the dynamics in state-space form
- Find the transfer function from T to Q1
- Plot the step response from T to Q1

Problem 3: J = 2.0 Kg m / s^2, B = 0.5 Ns/m, K = 3 Nm/rad