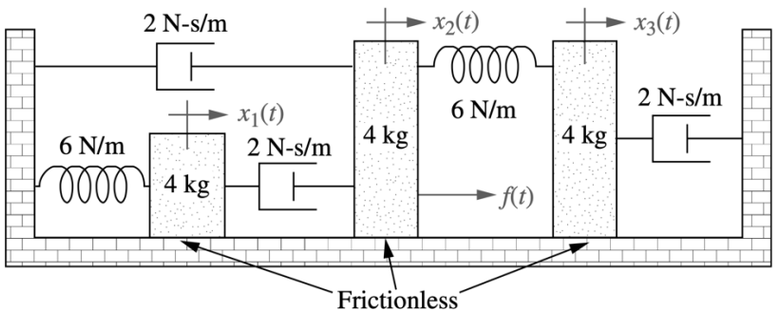
CMPE 30133 – FEEDBACK AND CONTROL SYSTEMS
1st Semester AY 2023-2024

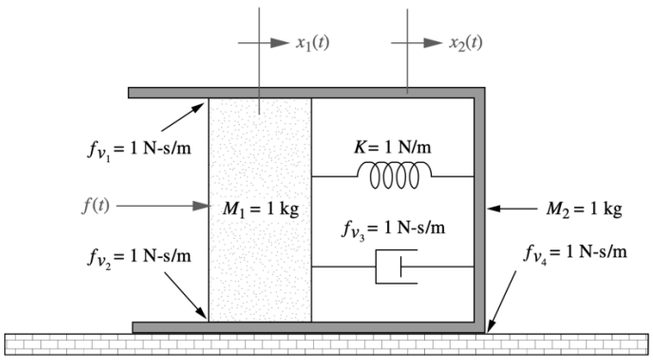
PROBLEM SET 3
MECHANICAL SYSTEM TRANSFER FUNCTION, BLOCK DIAGRAM ALGEBRA, AND SIGNAL FLOW GRAPH

Part I. Direction: Solve for the transfer function on each of the item below:

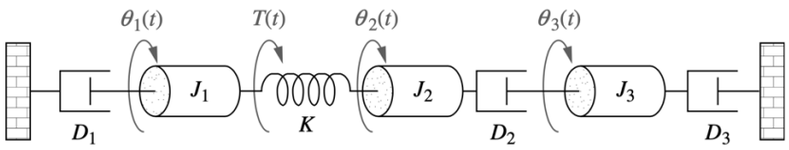
1. $\frac{X_3(s)}{F(s)}$



2. $\frac{X_2(s)}{F(s)}$

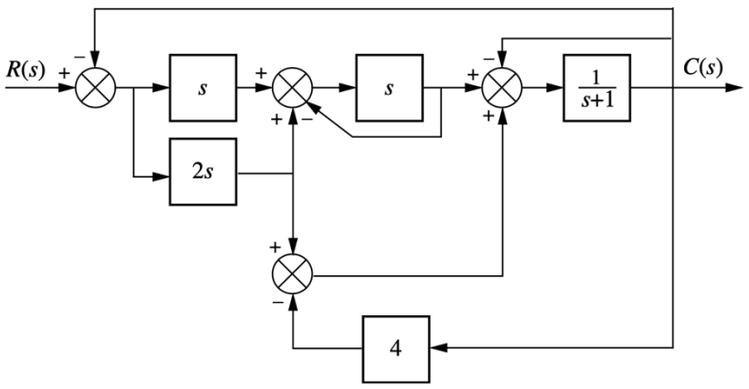


3. $\frac{\theta_3(s)}{T(s)}$

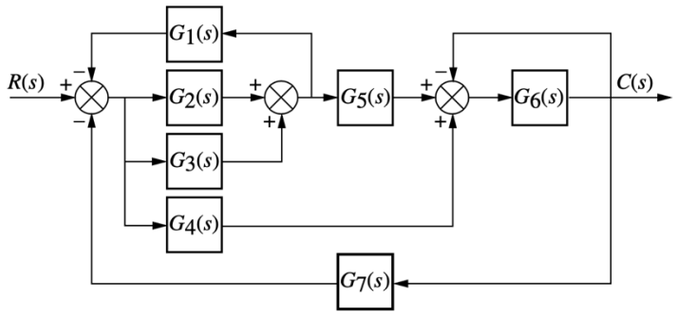


Part II. Direction: Solve for the required on each item:

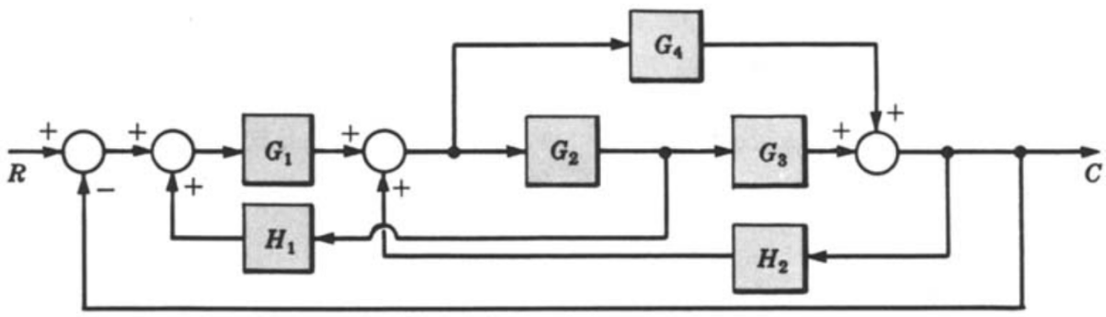
4. Reduce the block diagram to its open-loop form:



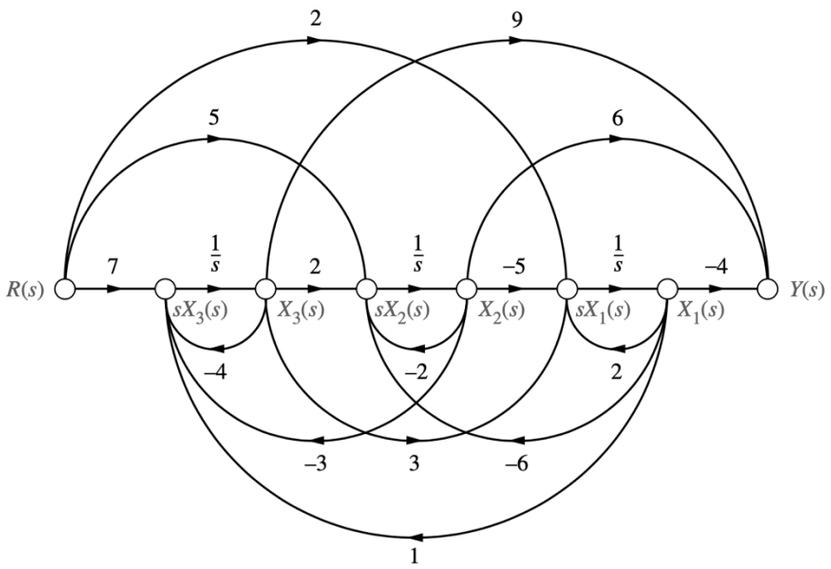
5. Reduce the block diagram into canonical form:



6. For the block diagram below, (a) convert it into a SFG, and (b) determine the transfer function C/R using Mason's Rule. (NO SHORTCUT)



7. Determine the transfer function Y/R.



DEADLINE: 12 JANUARY 2024, 6:00 PM (PHT) ***(To be collected before Long Exam 3)***