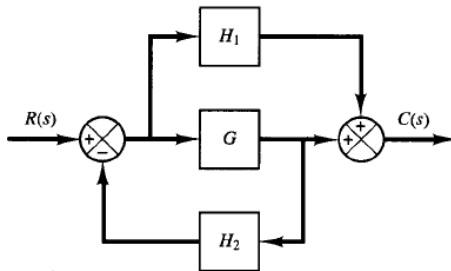


Name: \_\_\_\_\_ Section: \_\_\_\_\_

Point Values: Each problem counts 20 points.

1. Simplify the block diagram to obtain the transfer function  $C/R$ .



2. Write the standard form for a second-order differential equation transfer function and name the three parameters in the transfer function.
3. Why do we represent first- and second-order differential equations and their transfer functions in a standard form?
4. In the filter design problem, you designed both a passive and an active low-pass filter. Why is the active filter preferable?
5. For the transfer function  $G(D) = \frac{12}{10D+3}$ , derive the expression for the magnitude frequency response plot, i.e., amplitude ratio vs.  $\omega$ .