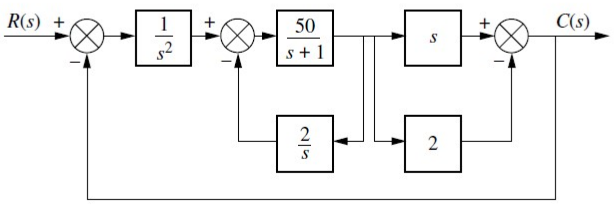
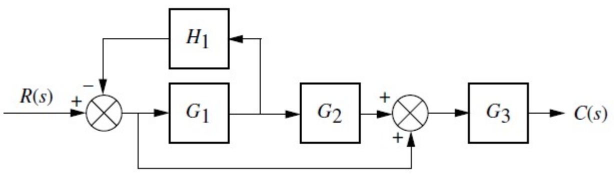
# Control Theory Assignment – Reduction of Multiple Subsystems

Sima Rishmawi, Birzeit University 15/10/2016

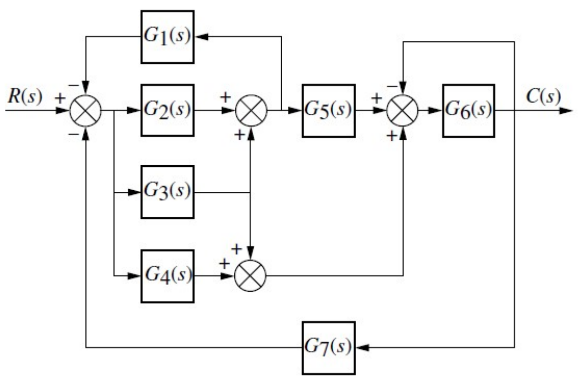
**1** Reduce the following block diagram to a single transfer function, $T(s) = \frac{C(s)}{R(s)}$.



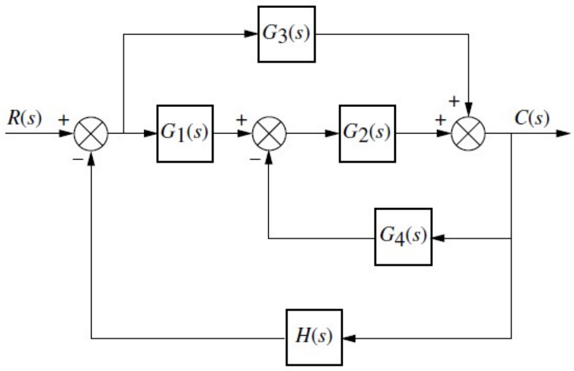

**2** Find the closed loop transfer function, $T(s) = \frac{C(s)}{R(s)}$ using block diagram reduction.



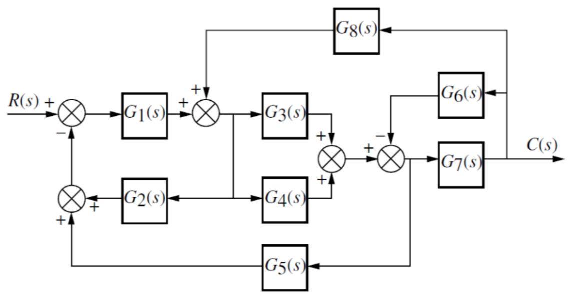

**3** Find the equivalent transfer function $T(s) = \frac{C(s)}{R(s)}$ for the system shown in the figure.



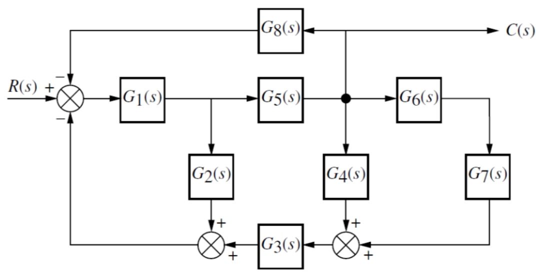

**4** Reduce the system in the figure to a single transfer function $T(s) = \frac{C(s)}{R(s)}$.



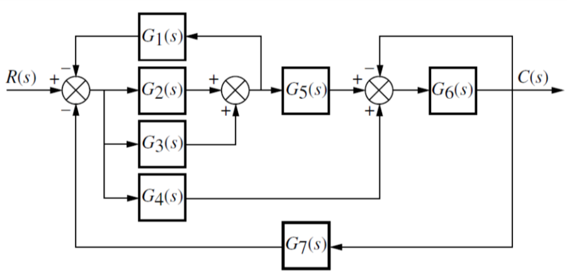

**5** Reduce the system in the figure to a single transfer function $T(s) = \frac{C(s)}{R(s)}$.



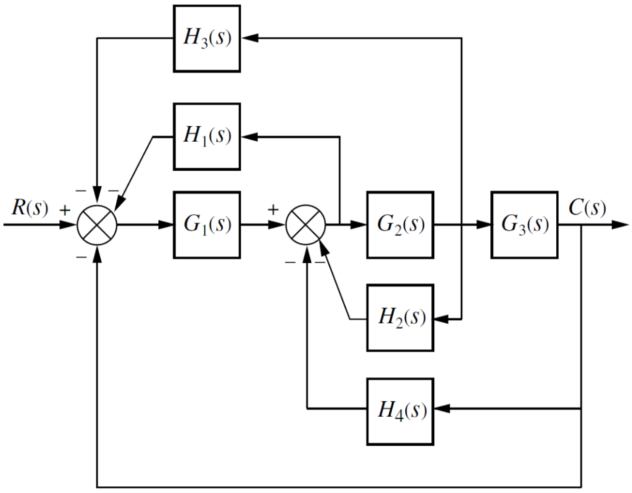

**6** Reduce the system in the figure to a single transfer function $T(s) = \frac{C(s)}{R(s)}$.



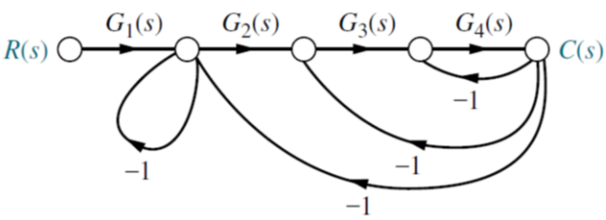

**7** Reduce the system in the figure to a single transfer function $T(s) = \frac{C(s)}{R(s)}$.



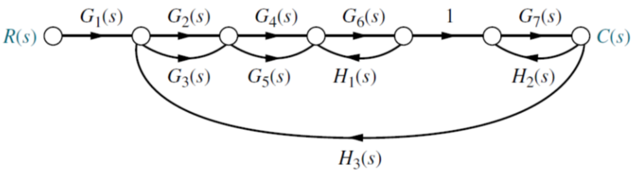
**8** Reduce the system in the figure to a single transfer function $T(s) = \frac{C(s)}{R(s)}$.



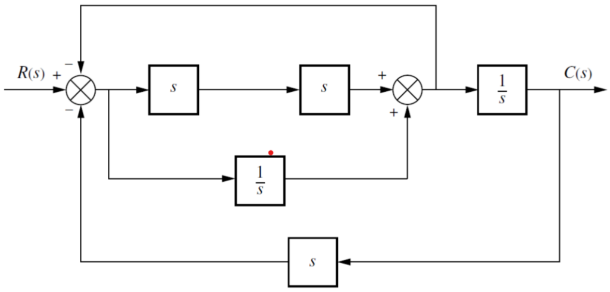

**9** Using Mason's Rule find the Transfer Function $T(s) = \frac{C(s)}{R(s)}$ for the system shown in the Figure.



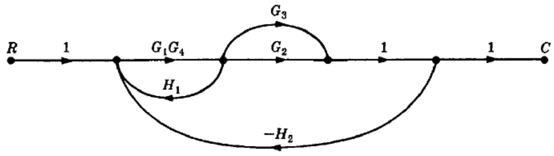

**10** Using Mason's Rule find the Transfer Function $T(s) = \frac{C(s)}{R(s)}$ for the system shown in the Figure.



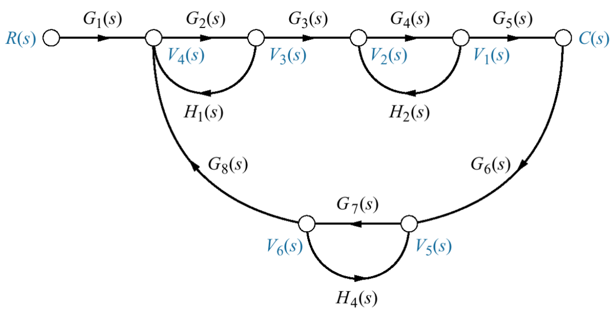

**11** Convert the Block Diagram in the Figure to a Signal Flow Graph, then, using Mason's Rule find the Transfer Function $T(s) = \frac{C(s)}{R(s)}$.




**12** Using Mason's Rule find the Transfer Function $T(s) = \frac{C(s)}{R(s)}$ for the system shown in the Figure.




**13** Using Mason's Rule find the Transfer Function $T(s) = \frac{C(s)}{R(s)}$ for the system shown in the Figure.




**14** Convert the Block Diagram in the Figure to a Signal Flow Graph, then, using Mason's Rule find the Transfer Function $T(s) = \frac{C(s)}{R(s)}$.