

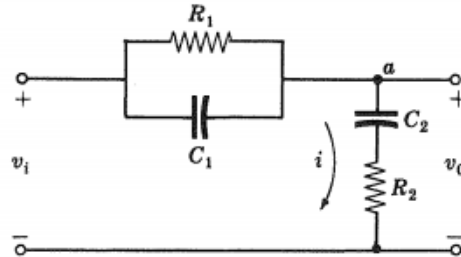
Question 1

Expand the equation below in the form of partial fractions.

$$Y(s) = -\frac{[s^2 + s - 10]}{s^3 + 3s^2 + 2s}$$

Question 2

Find the transfer function of the lead-lag compensator shown in Fig. Q2 below.



Question 3

Use block diagram reduction technique, find the transfer function $C(s) / R(s)$ of the block diagram shown in Fig. Q3.

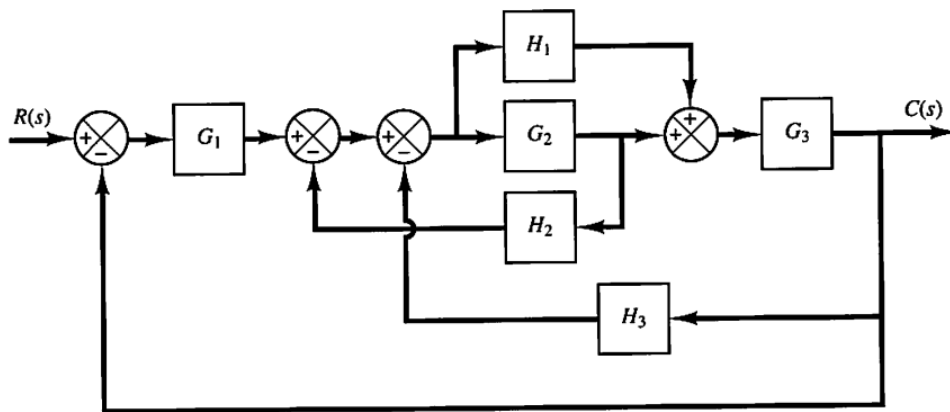


Fig. Q3

Question 4

For the Signal Flow Graph shown in Fig. Q4, find: (a) the input node(s); (b) the output node(s); (c) the path-gain of the forward path(s); and (d) the loop gains of the feedback loop(s).

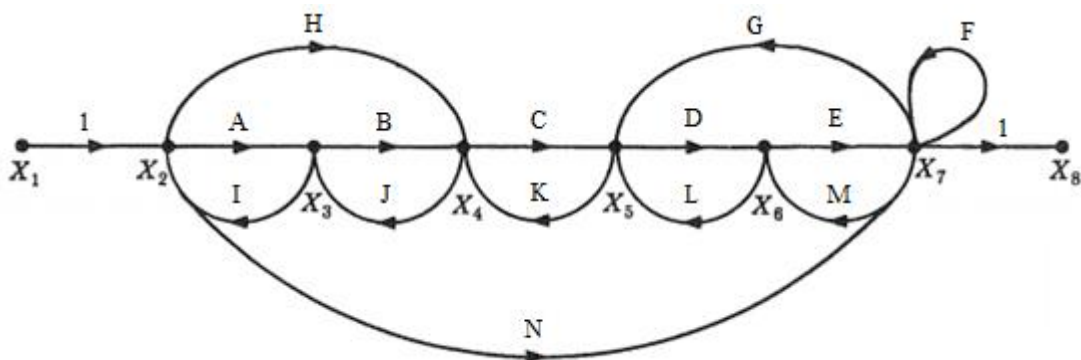


Fig. Q4