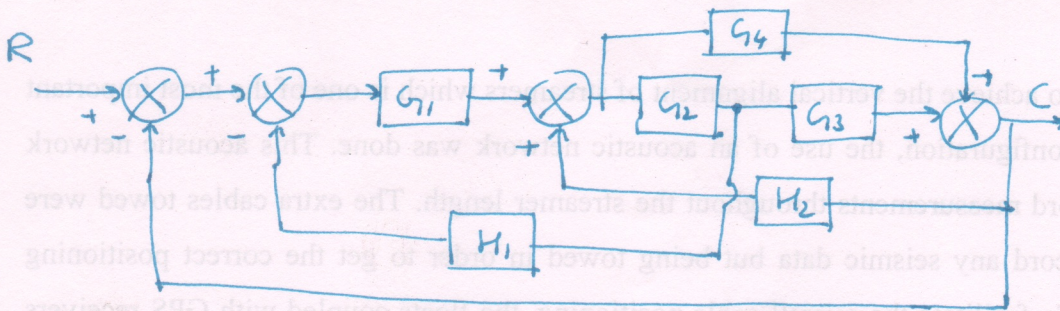# BLOCK DIAGRAM REDUCTION - CRITICAL RULE
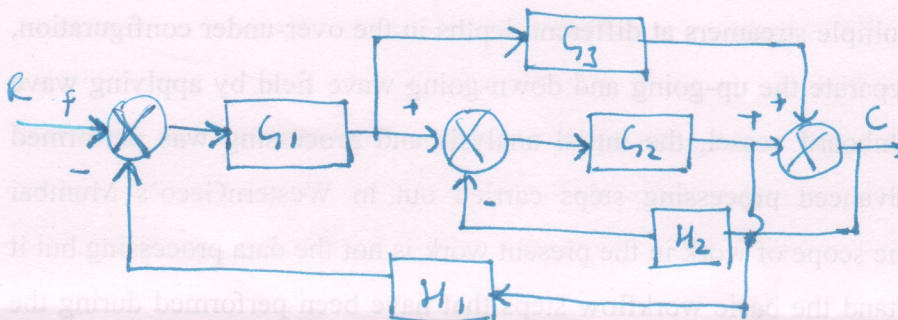
1.)

Find $C(s)/R(s)$

$$\left[\text{Ans: } \frac{C(s)}{R(s)} = \frac{G_1(G_2 G_3 + G_4)}{1 + G_1 G_2 H_1 + G_2 G_3 H_2 + G_4 H_2 + G_1 G_2 G_3 + G_1 G_4} \right]$$

2.)

find $\frac{C(s)}{R(s)}$

$$\left[\text{Ans } \frac{C(s)}{R(s)} = \frac{G_1 G_2 + G_1 G_3}{1 + G_2 H_2 + G_1 G_2 H_1 - G_1 G_2 G_3 H_1 H_2} \right]$$

3.)
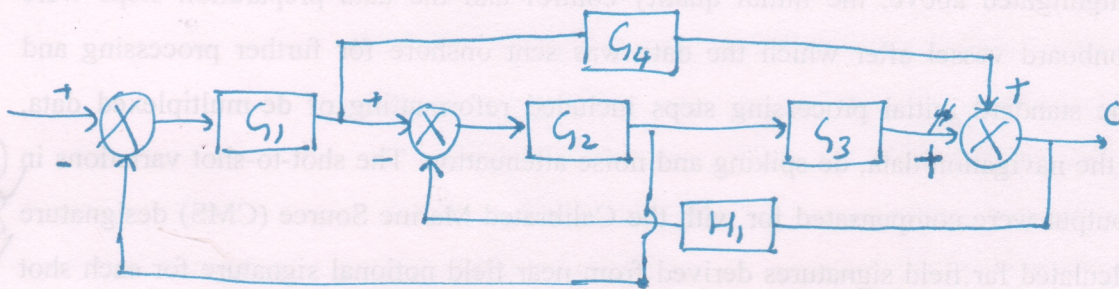
$$\left[\text{Ans: Please verify using Matlab} \right]$$