



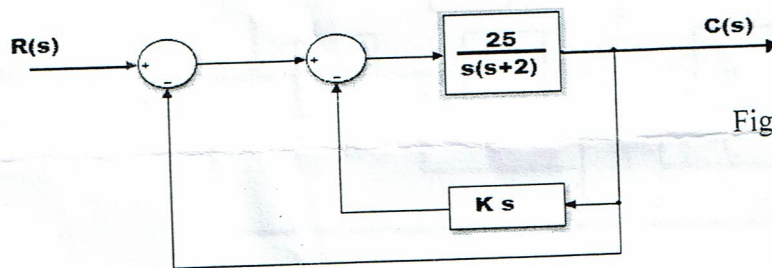
Note: answer five questions only

Q1. Draw the Bode Diagram for the following transfer function:

$$H(s) = 10 \frac{s+10}{s^2+3s}$$

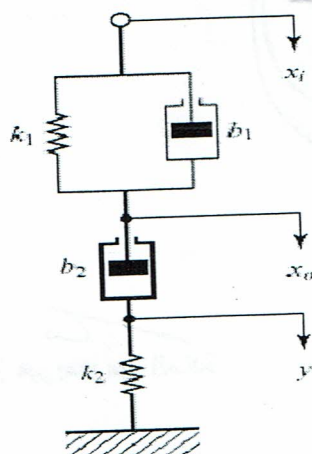
Q2. For system shown in figure(2) find:

- (A) Transfer function $C(s)/R(s)$
- (B) The state space equations
- (C) Determine the value of k so that the damping ratio equal 0.6
- (D) Sketch the unit step response?



Figure(2)

Q3.(A) Obtain the transfer function $X_o(s)/X_i(s)$ of the mechanical system shown in Figure (3)

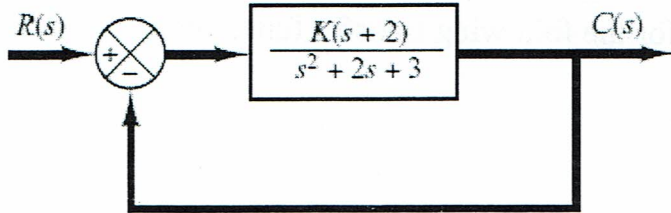


figure(3)

(B). discuss stability using Rowth stability Criterion

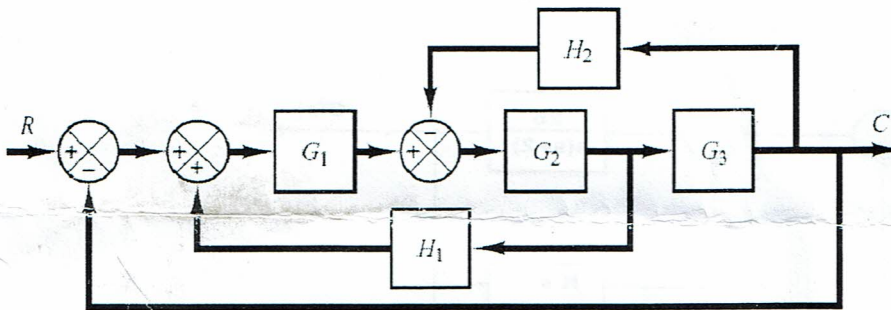
$$S^5 + 2 S^4 + 24 S^3 + 48 S^2 - 25 S - 50 = 0$$

Q4. Sketch the root loci for the system shown in Figure(4)



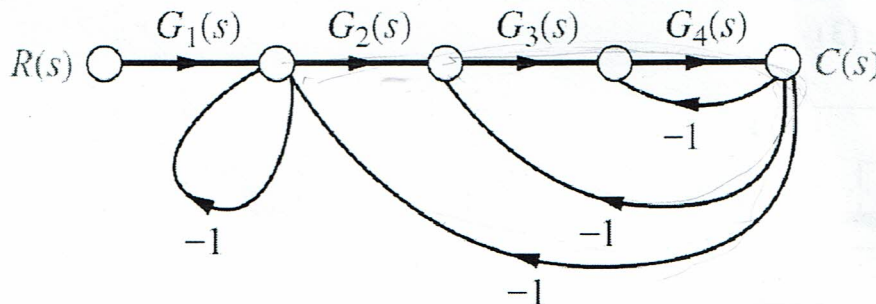
Figure(4)

Q5. Simplify the block diagram shown in Figure (5). Then obtain the closed-loop transfer function $C(s)/R(s)$.



Figure(5)

Q6. Use Mason's rule to find the transfer function, $T(s)=C(s)/R(s)$, for the system represented in Figure (6)



figure(6)

مع تمنياتنا لكم بالتوفيق والنجاح

رئيس القسم: أ.م. محمد صبري

م.م. ريفان زهير: مدرس المادة