

# ASSIGNMENT #1

Sub:- Control Systems

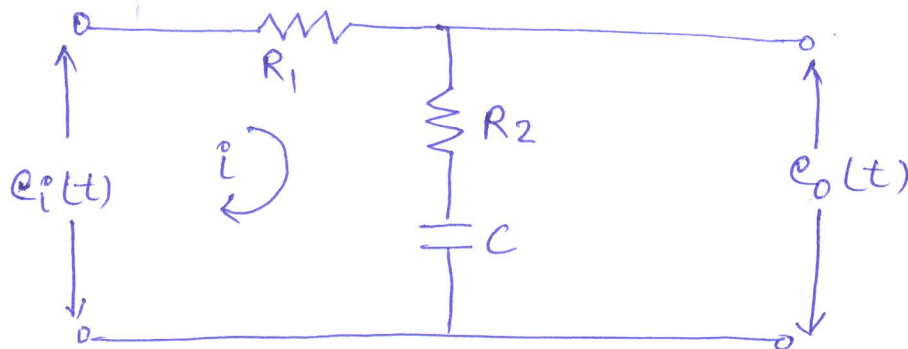
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Q.1:- What is control system? Distinguish between open loop and closed loop control system.

Q.2:- Explain the components of closed loop system.

Q.3:- Define Transfer function. Also list the Advantages & Disadvantages of Transfer function.

Q.4:- Find the transfer function of network shown below



Q.5:- Find the Laplace Transform of following functions.

a)  $e^{-at} \cos \omega t$

b)  $e^{-\delta \omega t} \sin \omega_n (\sqrt{1-\delta^2}) t$

c)  $\frac{1}{ab} \left[ 1 + \frac{1}{a-b} (b e^{-at} - a e^{-bt}) \right]$

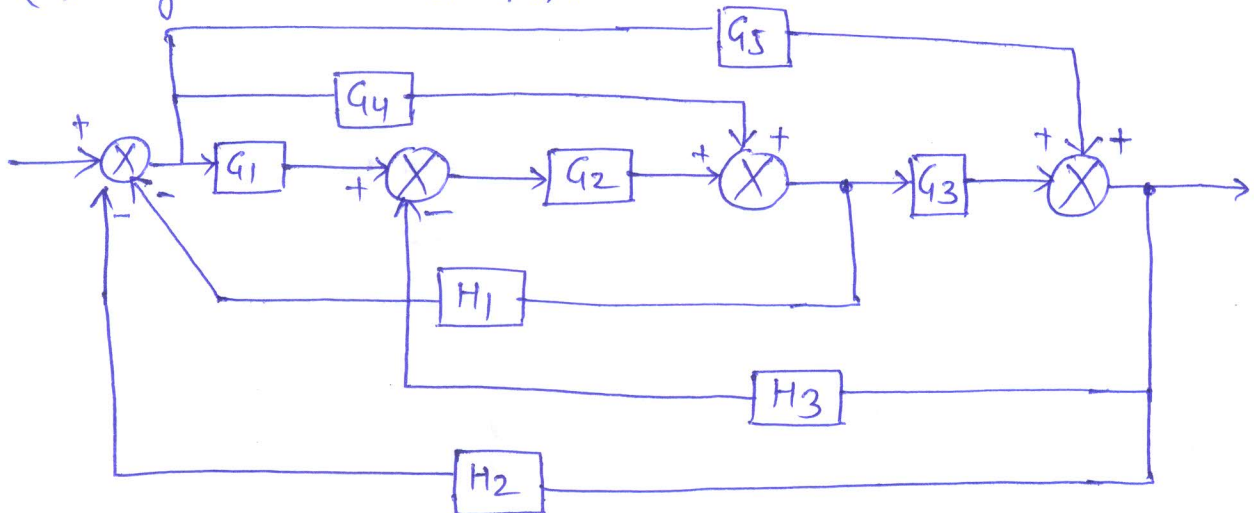
# ASSIGNMENT # 2

Sub!- Control systems

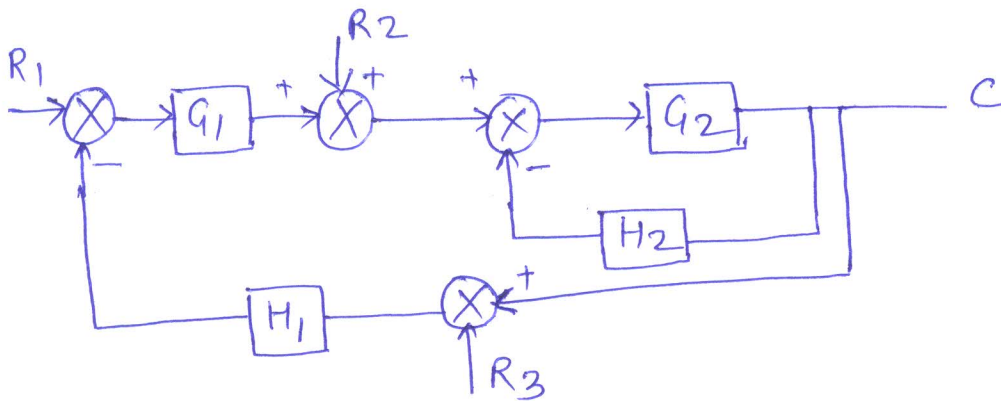
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Q.1. For system shown in fig obtain  $\frac{C(s)}{R(s)}$  by.

- (i) Block Diagram Reduction Technique
- (ii) Signal Flow Graph.



Q.2:- Find the Total Transfer function  $\frac{C}{R}$  using Block diagram Reduction Technique.



Q.3:- For the system represented by given equations, find the Transfer function  $\frac{x_5}{x_1}$  by the help of signal flow graph Technique.

$$x_2 = a_{12}x_1 + a_{32}x_3 + a_{42}x_4 + a_{52}x_5$$

$$x_3 = a_{23}x_2$$

$$x_4 = a_{34}x_3 + a_{44}x_4$$

$$x_5 = a_{35}x_3 + a_{45}x_4$$