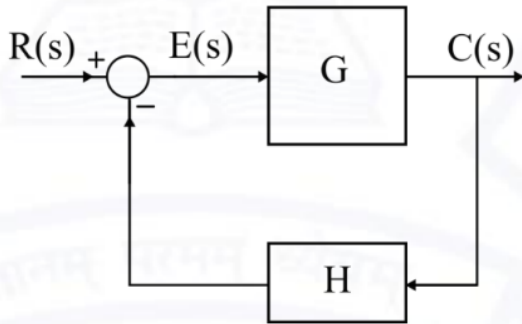


# GATE:EE/63

EE23BTECH11208 - Manohar K\*

**Question:** For the closed loop system shown, the transfer function  $\frac{E(s)}{R(s)}$  is



$$E(s) = R(s) - H \times G \times E(s) \quad (4)$$

$$E(s) + H \times G \times E(s) = R(s) \quad (5)$$

$$\therefore \frac{E(s)}{R(s)} = \frac{1}{1 + GH} \quad (6)$$

- (a)  $\frac{G}{1+GH}$
- (b)  $\frac{GH}{1+GH}$
- (c)  $\frac{1}{1+GH}$
- (d)  $\frac{1}{1+G}$

(GATE EE 2021)

**Solution:**

Given,

symbol	description
$G$	Forward path gain
$H$	Feedback path gain
$R(s)$	Input signal
$C(s)$	Output signal
$E(s)$	Error signal

TABLE I  
PARAMETERS

$$C(s) = G \times E(s) \quad (1)$$

$$\text{Feedback signal} = H \times C(s) \quad (2)$$

Error signal = Input signal - Feedback signal

$$E(s) = R(s) - H \times C(s) \quad (3)$$