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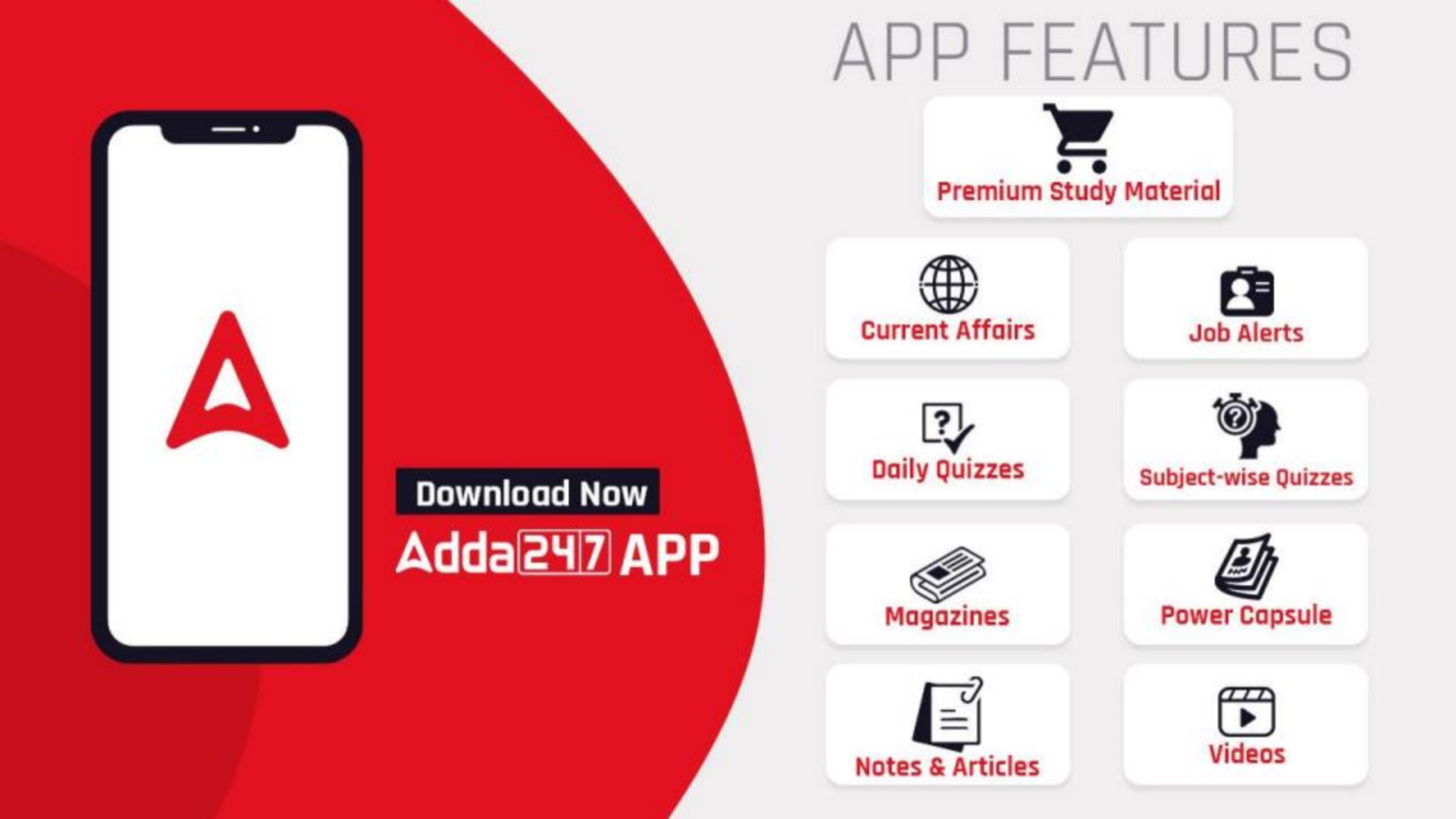
TO Adda247

Belief creates the actual fact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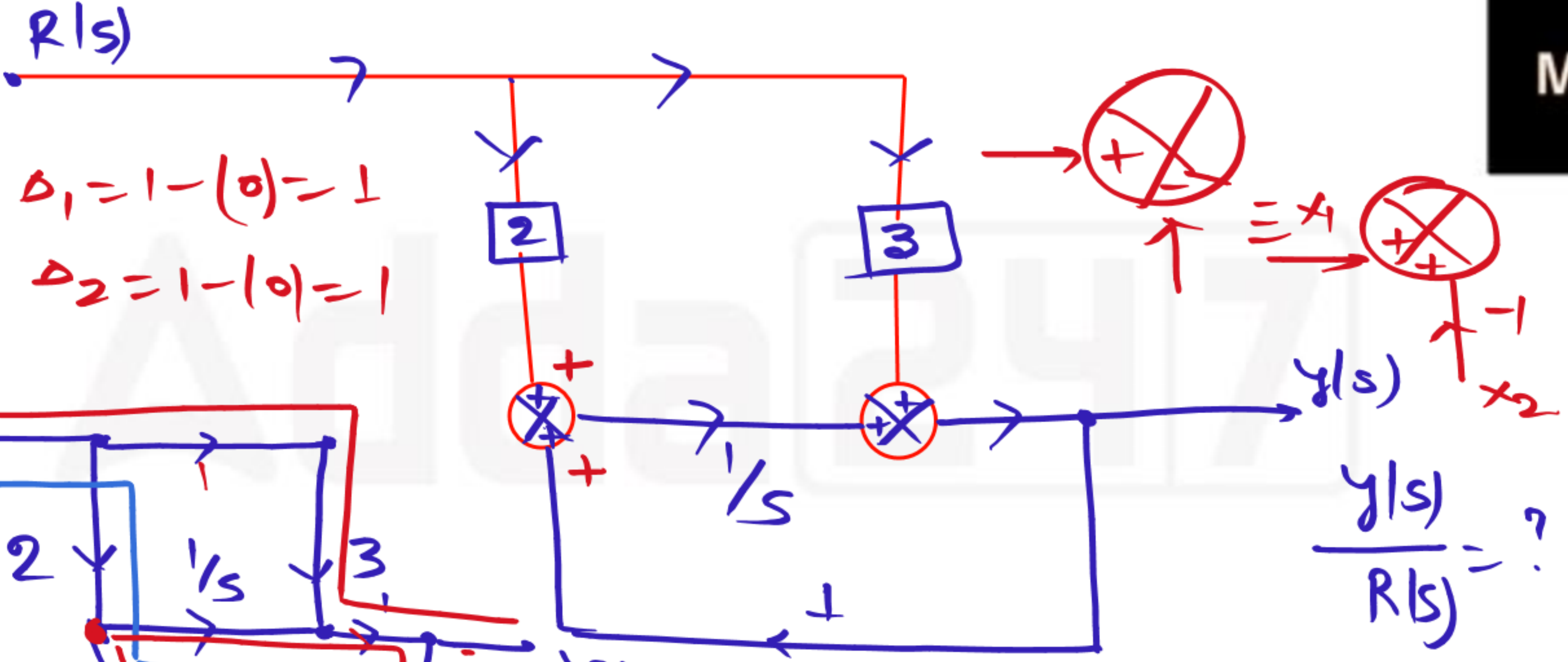
Revision

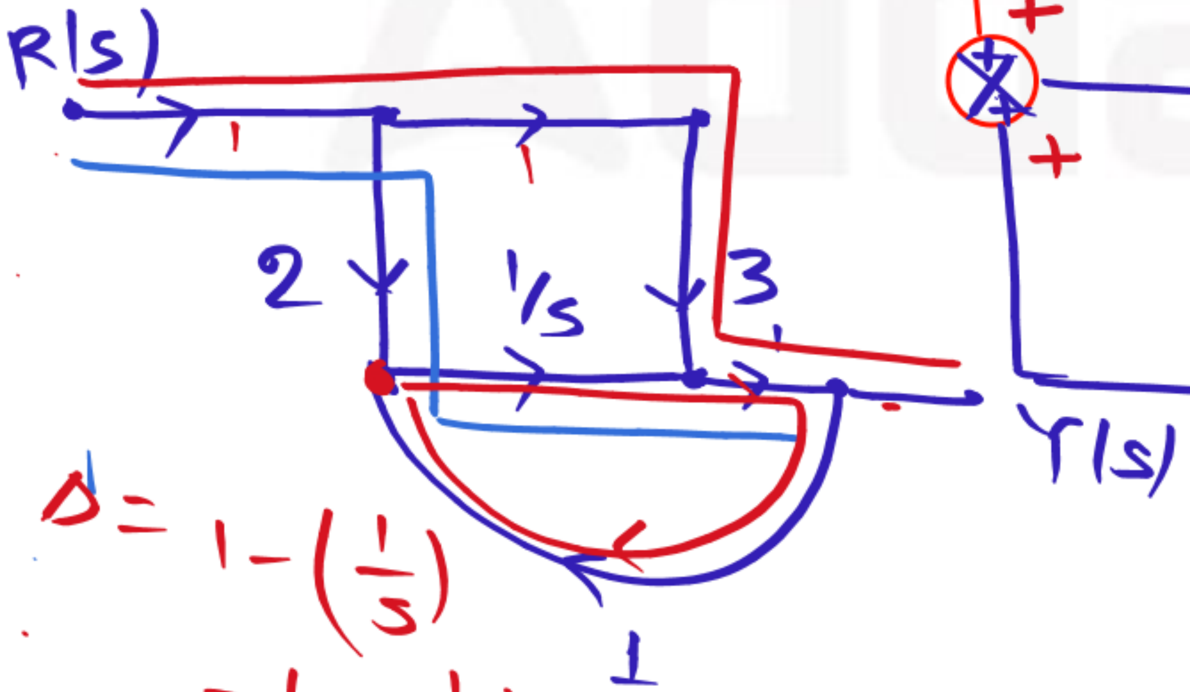
$\frac{C}{R}$ → tr. f^n → mason's gain form.

R → input node



$P_1 = 3 \quad \Delta_1 = 1-(0) = 1$

$P_2 = \frac{2}{s} \quad \Delta_2 = 1-(0) = 1$



$\frac{Y(s)}{R(s)} = ?$

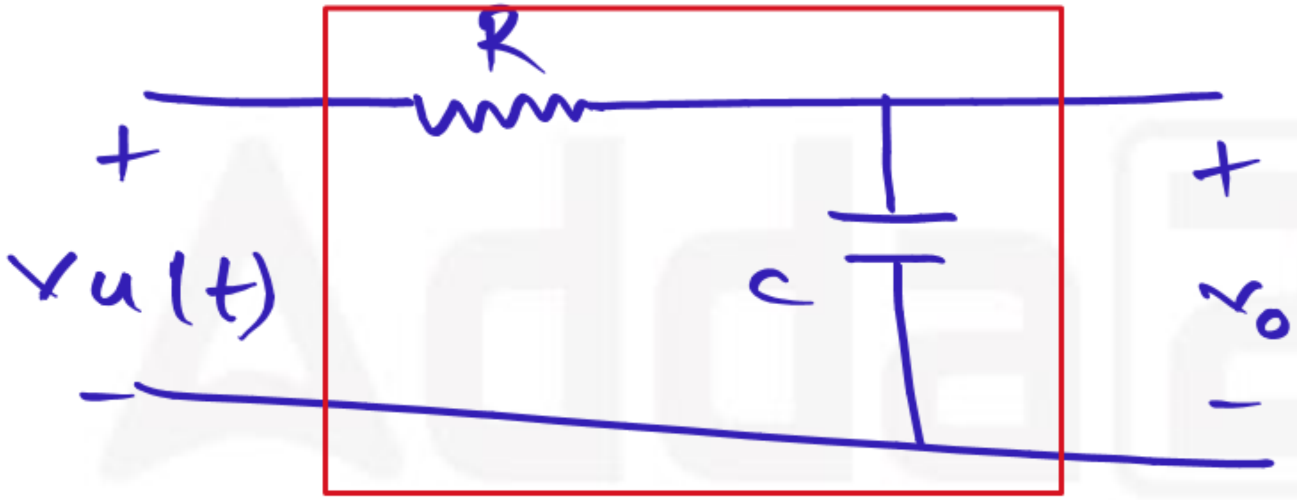
$\Delta = 1 - \left(\frac{1}{s}\right)$

$= \left(1 - \frac{1}{s}\right)$

$\frac{Y}{R} = \frac{P_1\Delta_1 + P_2\Delta_2}{\Delta}$

$\frac{Y}{R} = \frac{3 + \frac{2}{s}}{1 - \frac{1}{s}} = \frac{3s+2}{s-1}$

Time Response Analysis



$$v_o(t) = V\left[1 - e^{-t/RC}\right] \cdot u(t)$$

$$Vu(t) = V \quad t > 0$$
$$= 0 \quad t < 0$$

$$v_o(t) = V \cdot u(t) - V \cdot e^{-t/RC} \cdot u(t)$$

$V \cdot u(t)$ → steady state

$V \cdot e^{-t/RC} \cdot u(t)$ → transient resp.

$t \to \infty, \; V e^{-t/RC} u(t) = 0$

transient response :→ the response which become zero as $t \to \infty$ (steady state).

steady state response :→ the remaining response when transient die out, steady state resp.

eg :-> $\left\{ c(t) = \underline{\sin t} + \underline{e^{-t}\cos t} \right\}$

↓ steady st.

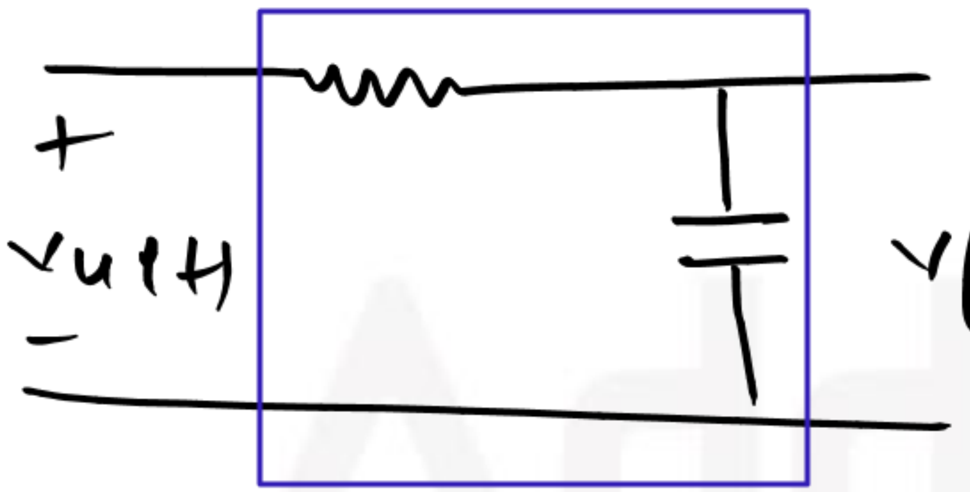
↓ transi.

$\underline{e^{-t}}$ $t \to \infty \Rightarrow e^{-\infty}$

$\Rightarrow \frac{1}{e^{\infty}} = \underline{0}$

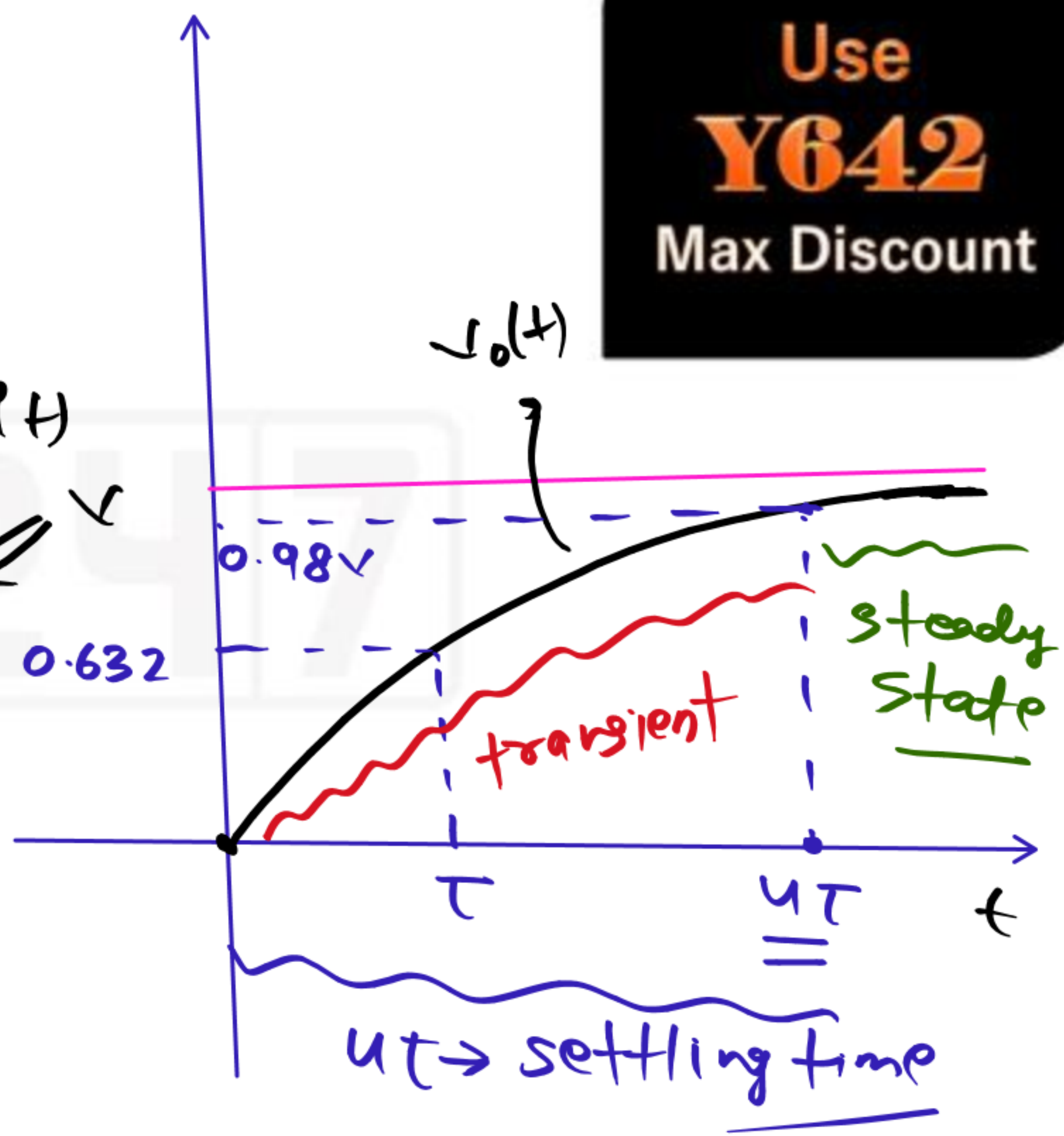
$\frac{1}{s+1} \to e^{-t}$

$\frac{1}{(s+1)(s+2)} = \underline{Ae^{-t} + Be^{-2t}}$



$V[1-e^{-t/RC}]u(t)$

desirable o/p



$v_o(t) = V(1-e^{-t/RC})u(t)$

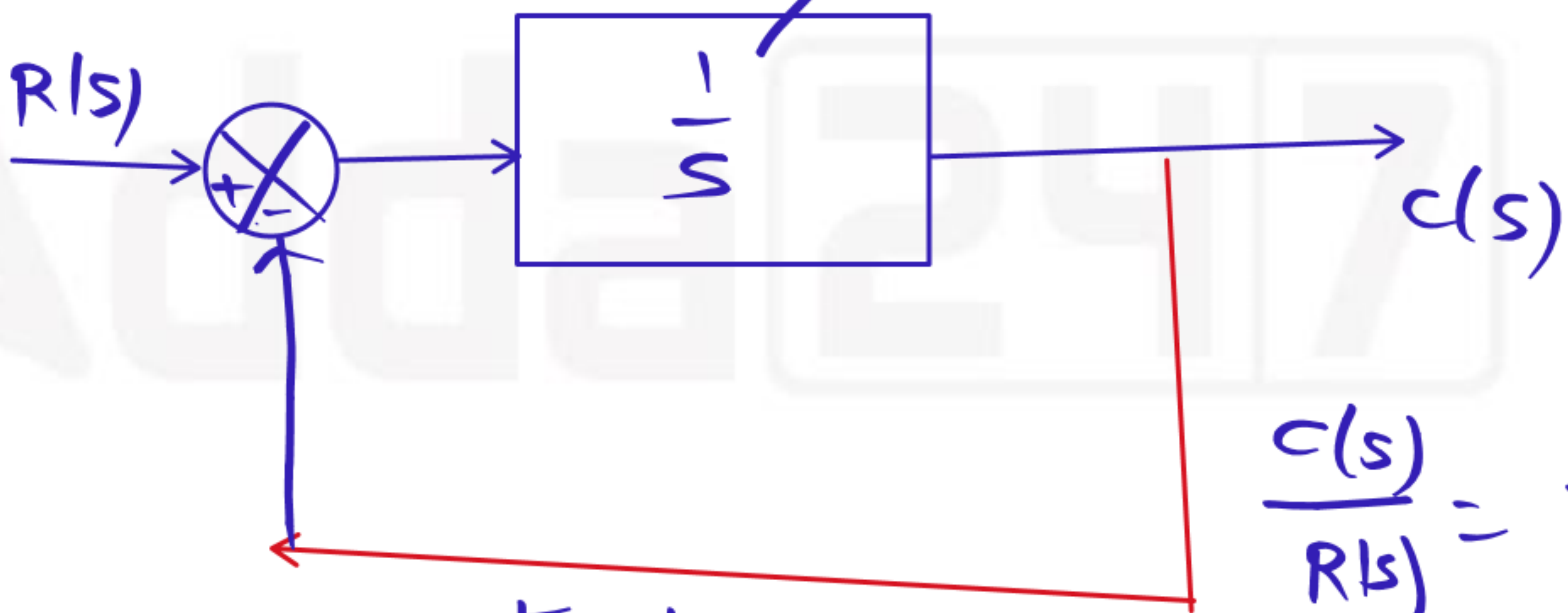
$t = RC = \tau, \quad v_o(t) = V \times 0.632$

$t = 4RC = 4\tau \quad v_o(t) = V \times 0.98$

Analysis :→

type 1- order-1

feed forward transfer f^n

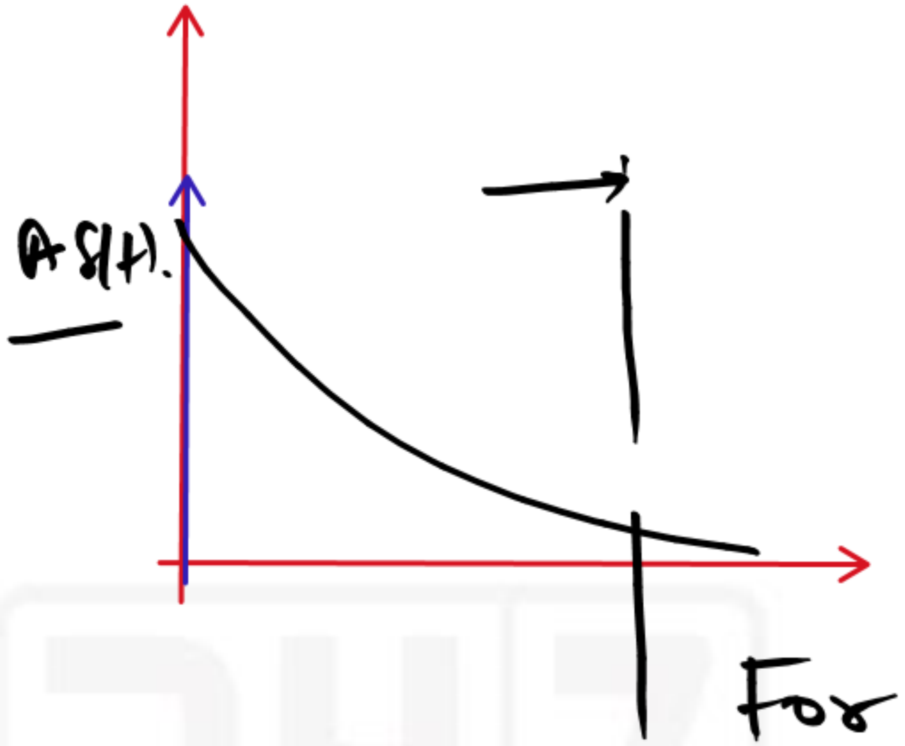


$$\left[\frac{C(s)}{R(s)} = \frac{1}{s+1}\right]$$

$$\frac{C(s)}{R(s)} = \frac{G(s)}{1+G(s)H(s)}$$

$$= \frac{\frac{1}{s}}{1+\frac{1}{s}} = \left(\frac{1}{s+1}\right)$$

$$\frac{C(s)}{R(s)} = \frac{1}{s+1}$$



1. for Impulse I/p

$r(t) = A\,\delta(t) \rightarrow R(s) = A$

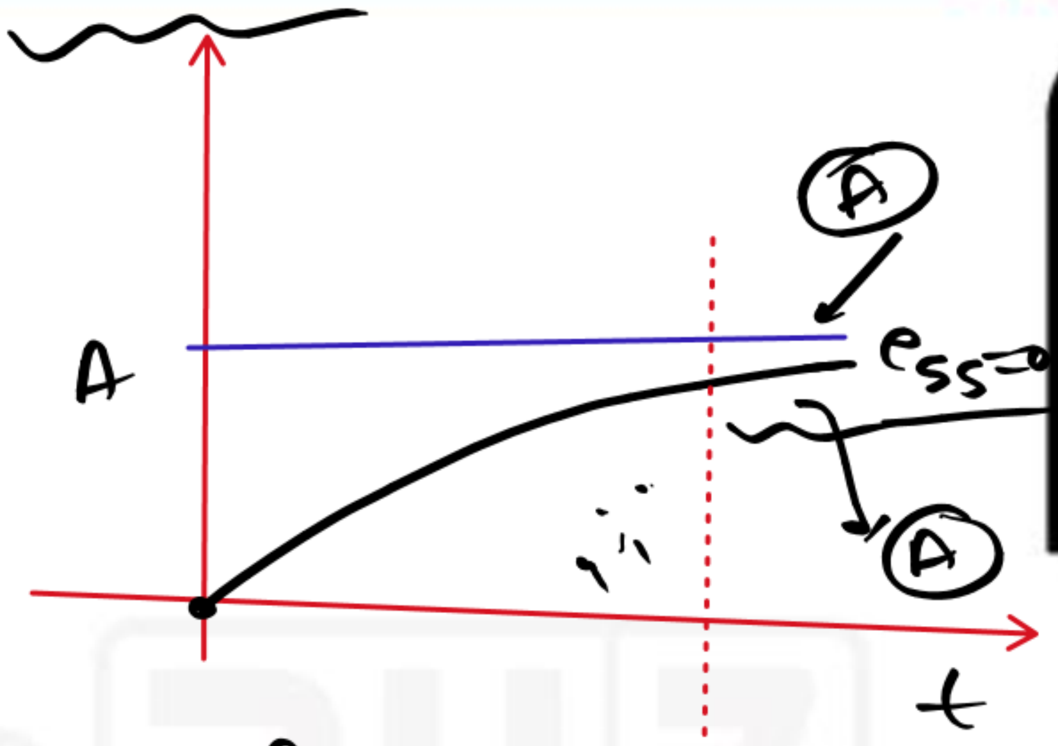
For impulse I/p e_{ss}, is not defined.

$C(s) = R(s) \times \frac{1}{s+1} = \frac{A}{s+1} \rightarrow Ae^{-t}u(t) = c(t)$

$$c(t) = Ae^{-t}u(t)$$ → impulse response

Step response

$$\frac{C(s)}{R(s)} = \frac{1}{s+1}$$



$$r(t) = A\,u(t) \Rightarrow R(s) = \frac{A}{s}$$

$$C(s) = \frac{A}{s(s+1)} = \frac{A}{s} - \frac{A}{s+1} \rightarrow \underbrace{A\left[1-e^{-t}\right]u(t)}_{c(t)}$$

THANKS FOR

Watching

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