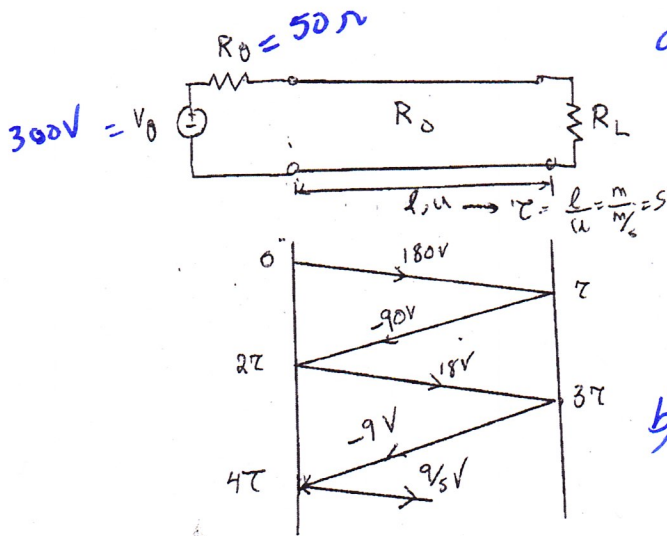


A. Very Quick solution

T-line transient LET US PLAY and LEARN

You are given a T-line system and the bounce diagram of the system. If you know that $R_g = 50 \text{ ohms}$ and $V_g = 300 \text{ V}$

- Find R_o
- Find R_L
- Draw V vs t at the load end for the first 4τ
- What is the current associated with the $V^+ = 180 \text{ V}$
- What is the current associated with $V^- = -90 \text{ V}$



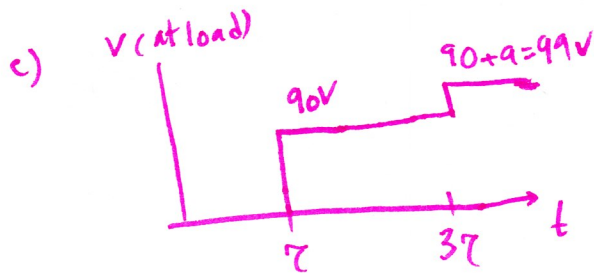
$$a) V_{1a}^+ = V_g \frac{R_o}{R_g + R_o}$$

$$180 = 300 \frac{R_o}{R_g + R_o} \Rightarrow \frac{R_o}{R_g + R_o} = \frac{3}{5}$$

$$\frac{3}{5} = \frac{R_o}{50 + R_o} \Rightarrow R_o = 75 \Omega$$

$$b) \Gamma_L = \frac{V^-}{V^+} = \frac{-90}{180} = -\frac{1}{2} \Rightarrow \frac{R_L - R_o}{R_L + R_o} = \frac{R_L - 75}{R_L + 75} = -\frac{1}{2}$$

$$\Rightarrow R_L = 25 \Omega$$



$$d) I^+ = \frac{V^+}{R_o} = \frac{180}{75} \text{ A} = 2.4 \text{ A}$$

$$e) I^- = -\frac{V^-}{R_o} = -\frac{-90}{75} = \frac{90}{75} \text{ A} = 1.2 \text{ A}$$