

PREGUNTA N°1

HAASCH

①- R_3, R_4, R_5 : serie

$$R_{345} = 10 + 20 + 18 = \underline{48 \Omega}$$

②- $R_2 ; R_{345}, R_6$: paralelo

$$R_{23456} = \left(\frac{1}{16} + \frac{1}{48} + \frac{1}{24} \right)^{-1} = \left(\frac{1}{8} \right)^{-1}$$

$$R_{23456} = \underline{8 \Omega}$$

③- $R_7 ; R_8$: paralelo

$$R_{78} = \left(\frac{1}{12} + \frac{1}{4} \right)^{-1} = \left(\frac{1}{3} \right)^{-1}$$

$$R_{78} = \underline{3 \Omega}$$

⑤- $R_1 ; R_{23456}$: serie

$$R_{123456} = 4 + 8 = 12 \Omega$$

$$\underline{R_{123456} = 12 \Omega}$$

④- R_{78}, R_9 : serie

$$R_{789} = 3 + 3 = 6 \Omega$$

$$\underline{R_{789} = 6 \Omega}$$

⑥- R_{123456}, R_{789} : paralelo

$$R_T = \left(\frac{1}{12} + \frac{1}{6} \right)^{-1} = \left(\frac{1}{4} \right)^{-1}$$

$$\boxed{R_T = 4 \Omega}$$

PREGUNTA N°2

① $R_3; R_4$: serie

$$R_{34} = 1000 + 800 \rightarrow \underline{R_{34} = 1800 \Omega}$$

② R_{34}, R_5 : paralelo

$$R_{345} = \left(\frac{1}{1800} + \frac{1}{800} \right)^{-1} = \left(\frac{13}{7200} \right)^{-1}$$

$$R_{345} = \frac{7200}{13} \rightarrow \underline{R_{345} = 553,85 \Omega}$$

③ $R_{345}, R_6; R_7$: serie

$$R_{34567} = 553,85 + 1000 + 2000$$

$$\underline{R_{34567} = 3553,85 \Omega}$$

④ $R_{34567}; R_8$: paralelo

$$R_{345678} = \left(\frac{1}{3553,85} + \frac{1}{1000} \right)^{-1}$$

$$\underline{R_{345678} = 780,4 \, \Omega}$$

⑤ R_{345678}, R_1, R_9 : serie

$$R_{123456789} = 1000 + 780,4 + 700$$

$$\underline{R_{123456789} = 2480,4 \, \Omega}$$

⑥ $R_{123456789}; R_{10}$: paralelo

$$R_{12345678910} = \left(\frac{1}{2480,4} + \frac{1}{800} \right)^{-1}$$

$$\underline{R_{12345678910} = 604,9 \, \Omega}$$

⑦ $R_{12345678910}; R_2$: serie

$$R_T = 604,9 + 500$$

$$\boxed{R_T = 1104,9 \, \Omega} \quad \textcircled{A}$$

PREGUNTA N° 2

$$\textcircled{1} I_T = \frac{V}{R_T} \rightarrow I_T = \frac{40}{1104,9}$$

$$I_T = 0,0362 \text{ A} = 36,2 \text{ mA}$$

$$V_{1345678910} = 0,0362 \cdot 604,9$$

$$V_{1345678910} = 21,9 \text{ Volts}$$

$$V_{13456789} = 21,9 \text{ Volts}$$

$$I_{13456789} = \frac{21,9}{2480,4} \rightarrow I_{13456789} = 8,83 \text{ mA}$$

$$\text{luego } V_{R8} = 780,4 \cdot 8,83 \cdot 10^{-3}$$

$$V_{R8} = 6,89 \text{ Volts} \quad \textcircled{B}$$

$$\underline{V_{345678} = 6,89 \text{ V}}$$

$$V_{34567} = 6,89 \text{ V}$$

$$I_{34567} = \frac{6,89}{3353,85} \rightarrow \underline{I_{34567} = 1,94 \text{ mA}}$$

$$V_{345} = 1,94 \cdot 10^{-3} \cdot 553,85$$

$$\underline{V_{345} = 1,07 \text{ V}}$$

$$V_{34} = 1,07 \text{ V}$$

$$I_{34} = \frac{1,07}{1800} \Rightarrow \underline{I_{34} = 0,6 \text{ mA}}$$

$$\therefore V_{R4} = 0,6 \cdot 10^{-3} \cdot 800$$

$$\underline{V_{R4} = 0,48 \text{ V}} \quad \textcircled{C}$$

$$\underline{I_{R3} = 0,6 \text{ mA}} \quad \textcircled{D}$$

PREGUNTA N°3

① R_1, R_2, R_4 : serie

$$R_{142} = 800 + 1000 + 1000$$

$$R_{142} = 2800 \, \Omega$$

② R_{142}, R_5 : Paralelo

$$R_{145} = \left(\frac{1}{2800} + \frac{1}{4000} \right)^{-1}$$

$$R_{145} = 1647,06 \, \Omega$$

③ R_{145}, R_6, R_8 : serie

$$R_{14568} = 1647,06 + 1000 + 1000$$

$$R_{14568} = 3647,06 \, \Omega$$

④ $R_{1245689}$, R_2 : paralelo

$$R_{1245689} = \left(\frac{1}{3647,06} + \frac{1}{1000} \right)^{-1}$$

$$\underline{R_{1245689} = 784,81 \, \Omega}$$

⑤ $R_{1245689}$, R_3 , R_7 : serie

$$R_T = 784,81 + 800 + 1000$$

$$\boxed{R_T = 2584,81 \, \Omega}$$

$$\boxed{R_T = 2,58 \, k\Omega} \quad (A)$$

$$I_T = \frac{V}{R_T} \Rightarrow I_T = \frac{40}{2584,81}$$

$$I_T = 15,48 \text{ mA}$$

$$V_{R3} = 15,48 \cdot 10^{-3} \cdot 800$$

$$V_{R3} = 12,38 \text{ V} \quad (B)$$

$$V_{145689} = 12,15 \text{ V}$$

$$I_{14568} = \frac{12,15}{3647,06} \Rightarrow I_{145689} = 3,33 \text{ mA}$$

$$V_{1459} = 3,33 \cdot 10^{-3} \cdot 1647,06$$

$$V_{1459} = 5,48 \text{ V}$$

$$V_{R5} = 5,48 \text{ V}$$

$$V_{149} = 5,48 \text{ V}$$

$$I_{149} = \frac{5,48}{2800} \rightarrow I_{149} = 1,96 \text{ mA}$$

$$V_{R1} = 1,96 \cdot 10^{-3} \cdot 800$$

$$V_{R1} = 1,568 \text{ V} \quad (C)$$

$$I_{R5} = \frac{5,48}{4000} \quad (D)$$

$$I_{R5} = 1,37 \text{ mA}$$