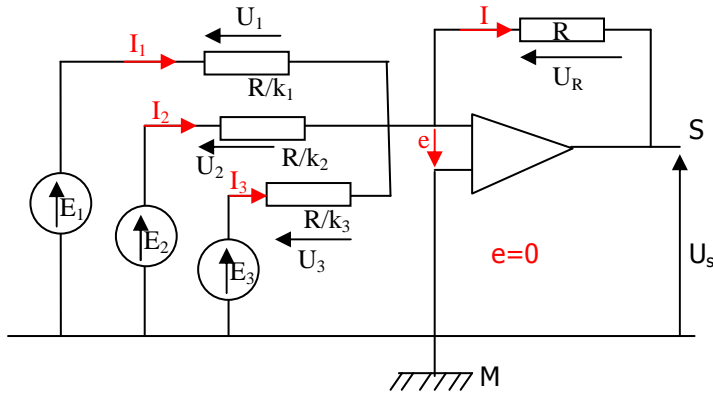


حل التمرين 03

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نطبق قانون إضافية التوترات :

$$U_s + RI = 0 \Rightarrow I = -\frac{U_s}{R}$$

$$E_1 - \frac{R}{k_1} I_1 = 0 \Rightarrow I_1 = k_1 \frac{E_1}{R}$$

$$E_2 - \frac{R}{k_2} I_2 = 0 \Rightarrow I_2 = k_2 \frac{E_2}{R}$$

$$E_3 - \frac{R}{k_3} I_3 = 0 \Rightarrow I_3 = k_3 \frac{E_3}{R}$$

حسب قانون العقد : $I = I_1 + I_2 + I_3$

نستنتج :

$$-\frac{U_s}{R} = k_1 \frac{E_1}{R} + k_2 \frac{E_2}{R} + k_3 \frac{E_3}{R} \Rightarrow U_s = -(k_1 E_1 + k_2 E_2 + k_3 E_3)$$

$$U_s = -\sum_{i=1}^{i=3} k_i E_i$$

Mohammed Sobhi