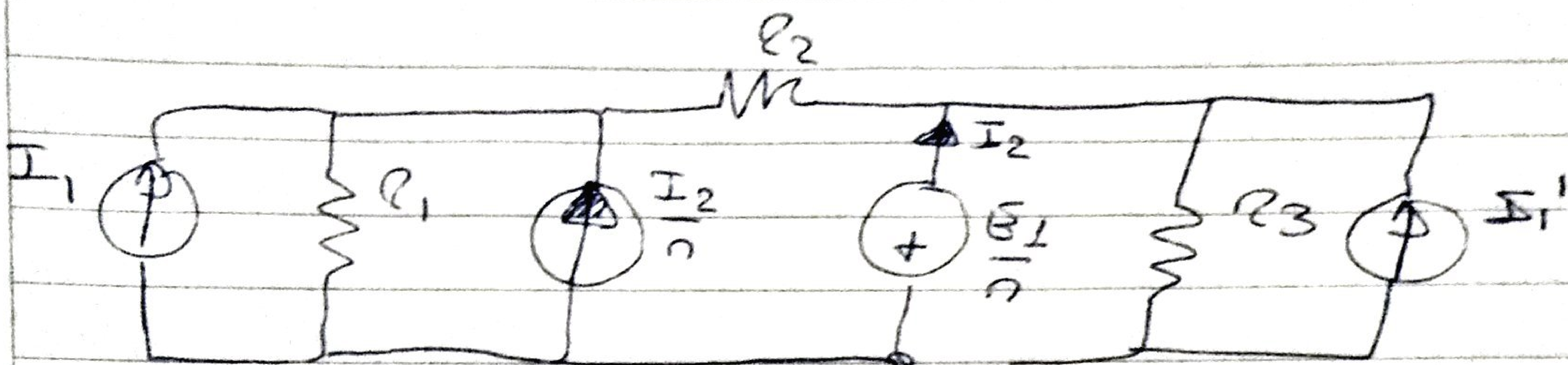
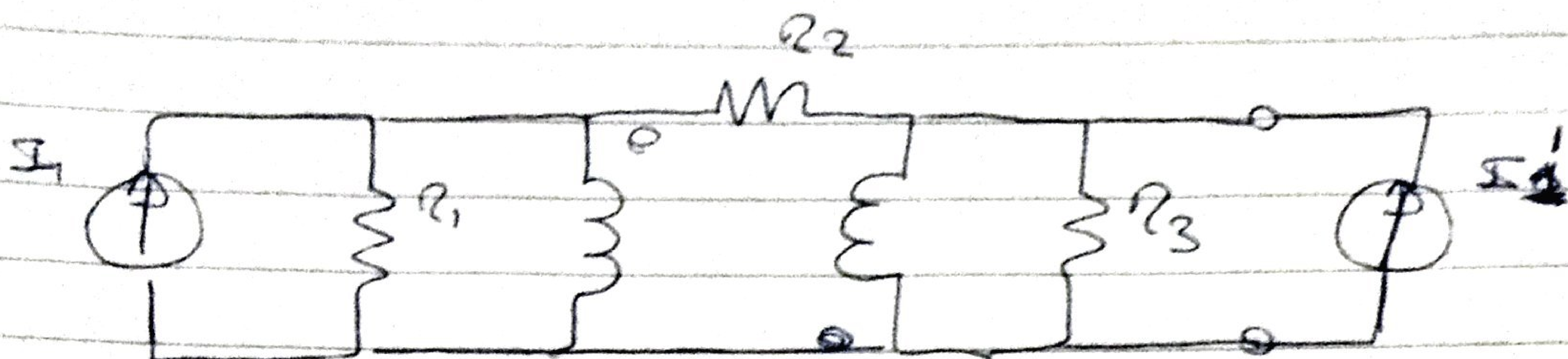


$$U_1 = Z_{11} I_1 + Z_{12} I_2$$

$$U_2 = Z_{21} I_1 + Z_{22} I_2$$



$$E_1 (G_1 + G_2) - G_2 E_2 = I_1 + \frac{I_2}{c}$$

$$E_2 (G_2 + G_3) - G_2 E_1 = I_2 + I_1'$$

$$Z_{11} = \frac{E_1}{I_1} \Big|_{I_2' = 0}$$

$$n = 1 \quad \hat{E}_1 = E_2$$

$$E_1 (G_1 + G_2) = I_1 + \frac{I_2}{c}$$

$$-E_1 (2G_2 + G_3) = I_2$$

$$\bar{E}_1 (G_1 + 4G_2 + G_3) = I_1$$

$$\frac{\bar{E}_1}{I_1} = \frac{1}{G_1 + 4G_2 + G_3}$$

$$Z_{22} = \frac{E_2}{I_2} \Big|_{I_1 = 0}$$

$$\cancel{Z_{22}} \quad E_1 (G_1 + G_2) - G_2 \bar{E}_2 = I_2$$

$$\bar{E}_2 (G_2 + G_3) - G_2 \bar{E}_1 = I_2 + I_1$$

$$-E_2 (G_1 + 2G_2) = I_2$$

$$E_2 (2G_2 + G_3) = I_2 + I_1$$

$$\bar{E}_2 (G_1 + 4G_2 + G_3) = I_1$$

$$\frac{\bar{E}_2}{I_1} = \frac{1}{G_1 + 4G_2 + G_3}$$

$$Z_{12} = \frac{E_1}{I_2} \Big|_{I_1 = 0}$$

$$E_1 (G_1 + 2G_2) = I_2$$

$$-E_1 (2G_2 + G_3) = I_2 + I_1$$

$$E_1 (G_1 + 4G_2 + G_3) = -I_1$$

$$\frac{\bar{E}_1}{I_1} = \frac{1}{G_1 + 4G_2 + G_3}$$

$$Z_{21} = \frac{E_2}{I_1} \mid I_2' = 0$$

$$-E_2 (G_1 + 2G_2) = I_1 + I_2$$

$$E_2 (2G_2 + G_3) = I_2$$

$$E_2 (G_1 + 4G_2 + G_3) = -I_1$$

$$\frac{E_2}{I_1} = - \frac{1}{G_1 + 4G_2 + G_3}$$