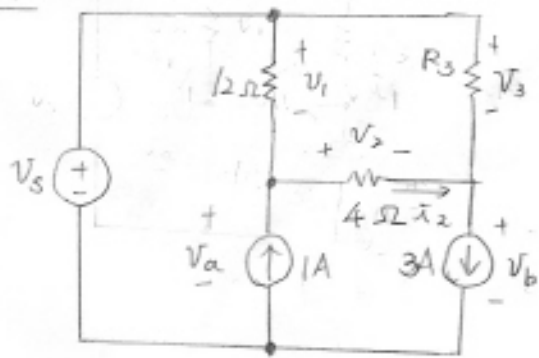


1.34



$$v_1 = v_s - v_a = 6 \text{ V}, \quad \bar{i}_1 = v_1 / 12 = 0.5 \text{ A}$$

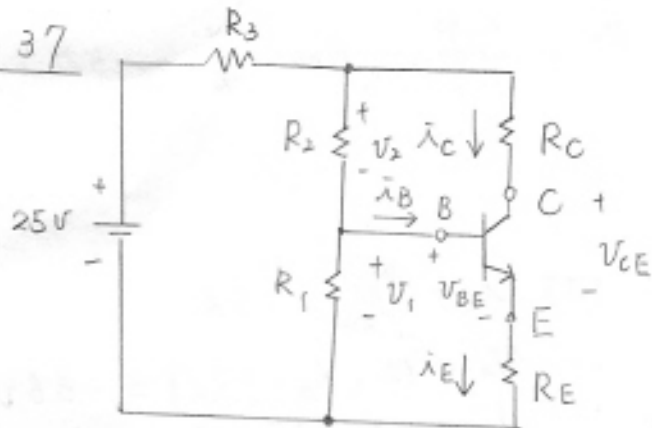
$$\bar{i}_2 = \bar{i}_1 + 1 = 1.5 \text{ A}$$

$$v_2 = 4 \bar{i}_2 = 6 \text{ V}, \quad v_b = v_a - v_2 = 0 \text{ V}$$

$$v_3 = v_s - v_b = 12 \text{ V}$$

$$\bar{i}_3 = 3 - \bar{i}_2 = 1.5 \text{ A}, \quad R_3 = v_3 / \bar{i}_3 = 8 \Omega$$

1.37



$$v_E = R_E \bar{i}_E = 700 \cdot 0.006 = 4.2 \text{ V}$$

$$v_{BE} = v_1 - v_E = 0.8 \text{ V}$$

$$v_2 = 25 - v_1 = 20 \text{ V}$$

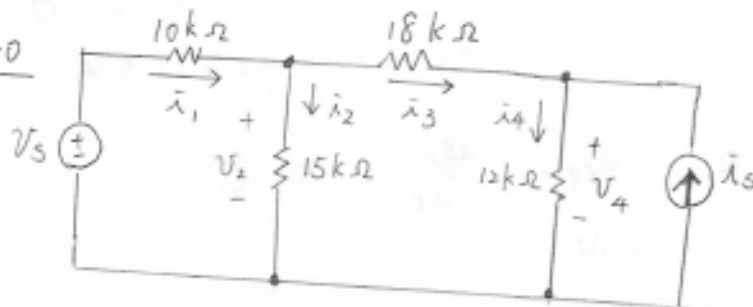
$$\bar{i}_B = v_2 / R_2 - v_1 / R_1 = 0.4 \text{ mA}$$

$$\bar{i}_C = \bar{i}_E - \bar{i}_B = 5.6 \text{ mA}$$

$$v_{CE} = 25 - R_C \bar{i}_C - v_E$$

$$= 15.2 \text{ V}$$

1.40



$$\bar{i}_4 = \bar{i}_5 + \bar{i}_3 = 16 \text{ mA}$$

$$v_4 = \bar{i}_4 \cdot 12 \text{ k} = 192 \text{ V}$$

$$P_i = v_4 \cdot \bar{i}_3 = 2880 \text{ mW}$$

$$v_3 = 18 \text{ k} \cdot \bar{i}_3 = 18 \text{ V}$$

$$v_2 = v_3 + v_4 = 210 \text{ V}$$

$$\bar{i}_2 = v_2 / 15 \text{ k} = 14 \text{ mA}$$

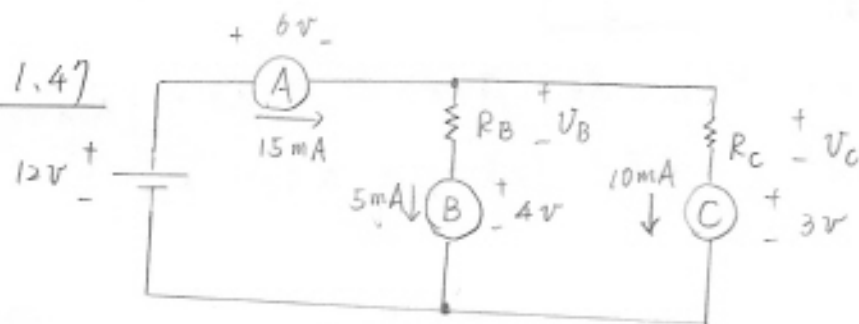
$$\bar{i}_1 = \bar{i}_2 + \bar{i}_3 = 15 \text{ mA}$$

$$v_1 = 10 \text{ k} \cdot \bar{i}_1 = 150 \text{ V}$$

$$v_5 = v_1 + v_2 = 360 \text{ V}$$

$$P_v = v_5 \cdot \bar{i}_1 = 5400 \text{ mW}$$

1.47



$$v_B = 12 - 6 - 4 = 2 \text{ V}$$

$$R_B = v_B / 5 \text{ mA} = 400 \Omega$$

$$v_C = 12 - 6 - 3 = 3 \text{ V}$$

$$R_C = v_C / 10 \text{ mA} = 300 \Omega$$

(There are alternative designs.)