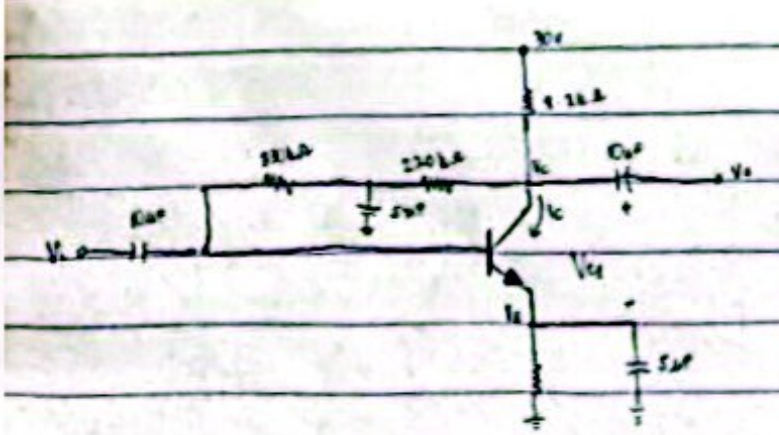
Determine I_C, V_C, V_E and V_{CE}.



$$V_{CC} - I_C R_C - I_B R_{B_1} - I_B R_{B_2} - V_{BE} - I_E R_E = 0$$

$$V_{CC} - \beta I_B R_C - I_B R_{B_1} - I_B R_{B_2} - V_{BE} - I_B (\beta + 1) R_E = 0$$

$$V_{CC} - V_{BB} = I_B \left(\beta R_C + R_{B_1} + R_{B_2} + R_E (\beta + 1) \right)$$

$$I_B = \frac{30 - 0.7}{\left[180 (5.2k) + 220k + 330k + 1.8k (180 + 1) \right]}$$

$$I_B \approx 12.46 \mu A$$

$$I_C = \beta I_B$$

$$= 180 (12.46 \mu A)$$

$$I_C \approx 2.24 mA$$

$$I_E = I_B + I_C$$

$$= 12.46 \mu A + 2.24 mA$$

$$I_E = 2.25 mA$$

$$V_C = V_{CC} - I_C R_C$$

$$= 30 - 2.24 mA (5.2k)$$

$$V_C = 11.6 V$$

$$V_{CE} = V_C - V_E$$

$$= 11.6 - 4.06$$

$$V_{CE} \approx 7.55 V$$

$$V_E = I_E R_E$$

$$= 2.25 mA (1.8k)$$

$$V_E \approx 4.06 V$$