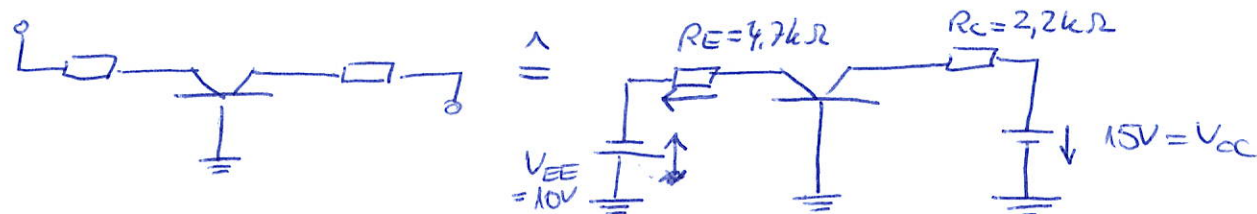


5.18

 $I_E - E$

$$-V_{EE} + V_{RE} + V_{BE} = 0 \rightarrow I_E \cdot R_E = V_{EE} - V_{BE} \quad \underline{I_E} = \frac{V_{EE} - V_{BE}}{R_E} = \underline{1.97 \text{ mA}}$$

 $I_C - E$

$$\underline{I_C} \approx \underline{I_E} \rightarrow \underline{1.97 \text{ mA}}$$

 $V_{CE} - E$

$$V_{CC} + V_{EE} - V_{RC} - V_{CE} - V_{RE} = 0 \quad V_{CE} = 25V - V_{RC} - V_{RE}$$

$$\underline{V_{CE}} = 25V - I_{C/E} (4.7k\Omega + 2.2k\Omega) = \underline{11.34V}$$

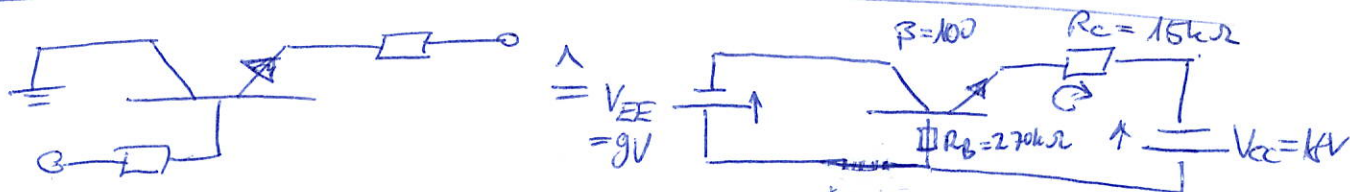
 $V_C - E$

$$\underline{V_C} = V_{CC} - R_C \cdot I_C = 15V - 2.2k\Omega \cdot 1.97 \text{ mA} = \underline{10.666V}$$

 $V_E - E$

$$V_{CE} = V_C - V_E \quad \underline{V_E} = V_C - V_{CE} = 10.66V - 11.34V = -0.674V \approx \underline{-0.7V}$$

5.19

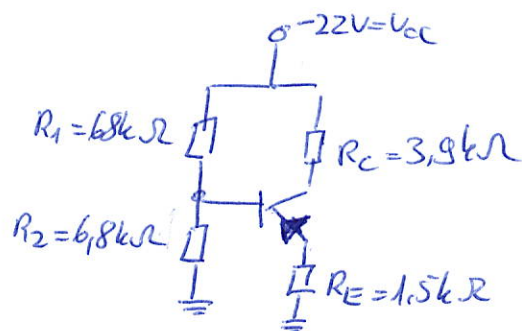
 $I_B - E$

$$V_{BE} + V_{RC} - V_{CC} = 0 \rightarrow I_B = \frac{V_{CC} - V_{BE}}{(\beta + 1) R_C + R_B} = \frac{18V - 0.7V}{101 \cdot 15k\Omega + 270k\Omega} = \underline{9.69 \mu A}$$

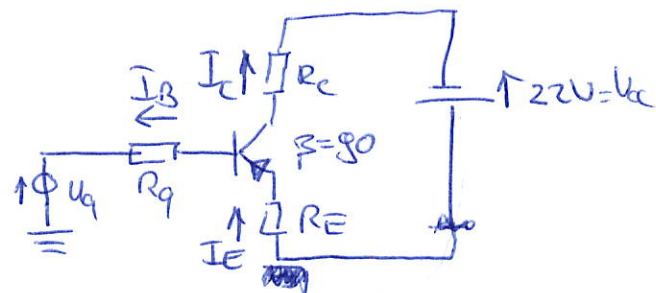
$$V_{CC} - V_{AB} - V_{BE} - V_{RC} = 0 \quad V_{CC} - I_B \cdot R_B - (\beta + 1) I_B \cdot R_C - V_{BE} = 0$$

$$\frac{V_{CC} - V_{BE}}{R_B + (\beta + 1) R_C}$$

5.20



Thevenin-T.



$$U_q = \frac{6,8k\Omega}{6,8k\Omega + 68k\Omega} \cdot 22V = 2V$$

$$R_q = \frac{6,8k\Omega \cdot 68k\Omega}{6,8k\Omega + 68k\Omega} = 6181\Omega$$

 $I_B - E.$

$$V_{CC} - V_{RE} - V_{BE} - V_{Rq} + U_q = 0 \quad 22V + 2V - 0,7V = (\beta + 1)I_B \cdot R_E + I_B \cdot R_q$$

$$I_B = \frac{23.3V}{(\beta + 1)R_E + R_q} = 1,63 \cdot 10^{-4}A$$