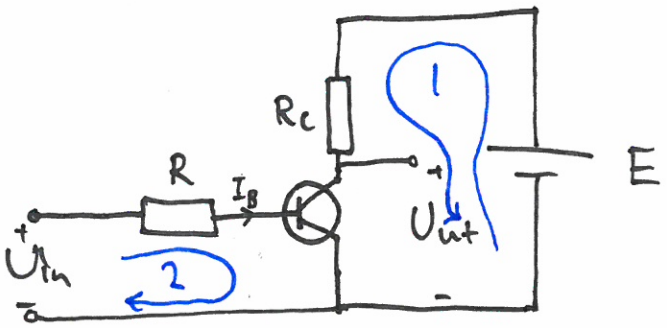
E-7) Likströmsschema:



$E = 5.0\ V$

$R_C = 625\ \Omega$

$h_{FE} = 50$

$U_{BE} = 0.7\ V$

(1) $E - R_C \cdot I_C - U_{ut} = 0$

Antag $U_{ut} = 0$ vid bottning

(1) $\Rightarrow$ $I_C = \frac{E}{R_C} = \frac{5}{625} = 8\,mA$

$\tilde{I}_B = \frac{I_C}{h_{FE}} = \frac{8m}{50} = 160\,\mu A$

Basströmmen dubbelt så stor ger

$I_B = 2 \cdot \tilde{I}_B = 320\ \mu A$

(2) $U_{in} - R \cdot I_B - U_{BE} = 0 \Rightarrow$

$R = \frac{U_{in} - U_{BE}}{I_B} = \frac{5 - 0.7}{320\mu} = 13.4\ k\Omega$

$\boxed{R = 13.4\ k\Omega}$

Transistorn bottnar för redan $I_B = \tilde{I}_B$

(2) $\Rightarrow$ $U_{in} = U_{BE} + R \cdot \tilde{I}_B = 13.4k \cdot 160\mu + 0.7 = 2.84\ V$

$\boxed{U_{in} \geq 2.84\ V}$