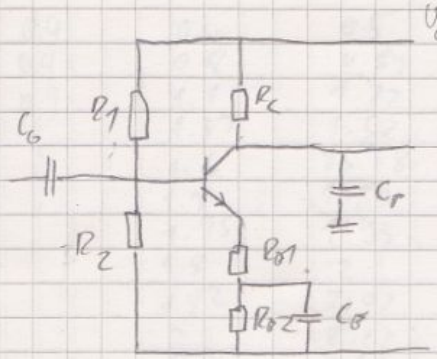
①



$$V_{BB} = \frac{V_{CC}}{R_1+R_2}\cdot R_2 = 5.305\ V$$

$$R_B = R_1 \| R_2 = 8.2 \| 8.3 = 2.353\ k\Omega$$

$$V_{BB} = V_{BEQ} + (1+\beta)(R_{B1}+R_{B2})I_{BQ} + I_{BQ}\cdot R_B$$

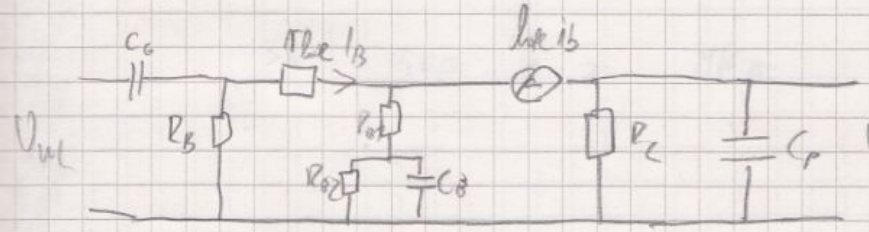
$$I_{BQ} = \frac{V_{BB}-V_{BEQ}}{R_B+(1+\beta)(R_{B1}+R_{B2})} = 24.189\ \mu A$$

$$r_{be} = \frac{V_T}{I_{BQ}} = 1033.52\ \Omega \qquad I_{CQ} = 3.628\ mA$$

$$V_{CB} = -I_{CQ}\cdot(R_C + R_{B1} + R_{B2}) + V_{CC} =$$

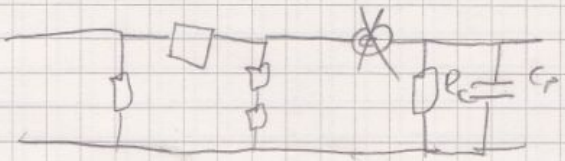
$$= 5.954 = 3V$$

$$V_{IB,max} = V_{CC} - R_C\cdot I_{CQ} = 8.57V$$



$$A_{V0} = \frac{V_{IB}}{V_{in}} = \frac{-h_{fe} I_b \cdot R_C}{I_B\left((1+h_{fe})R_{B1} + r_{be}\right)} = -11.5 = 21.15\ dB \quad \angle 180°$$

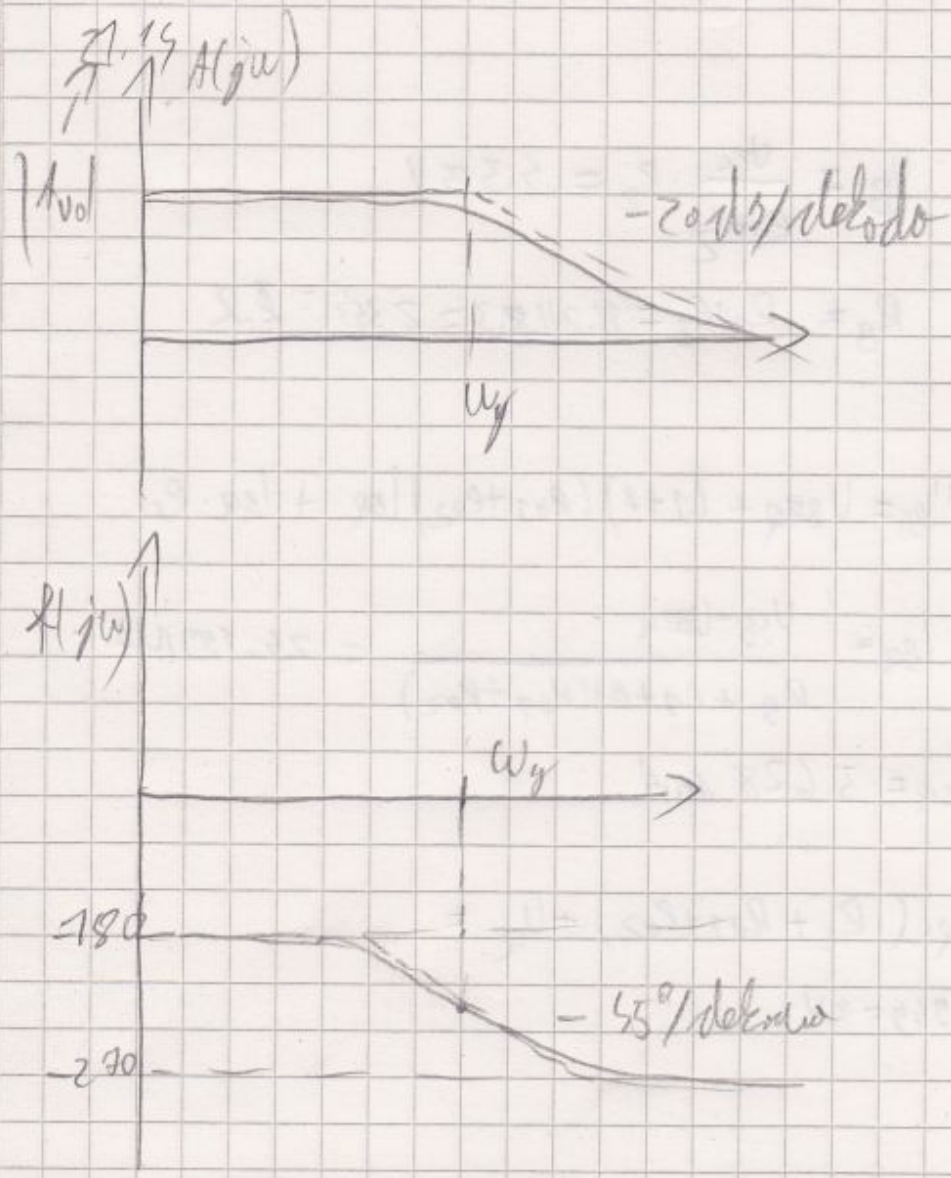
② $A_V(j\omega) = A_{V0}\cdot \frac{1}{1+\frac{\omega}{\omega_y}}$



$$\hat{\jmath}_{IB} = (R_C)\cdot C_P$$

$$\omega_y = \frac{1}{\tau_{IB}} = 5.55\cdot 10^6\ rad\ s^{-1}$$

$$f_y = 884.194\ kHz$$


A(jω)
|A_v0|
-20dB/dekado
ω_g
A(jω)
ω_g
-180
-45°/dekado
-270