

Analog Tümdüvveler (Kisa Sınavı)

$$a) f_0 = \frac{I_1 + \frac{9}{4} \text{ mA} + \frac{V_k}{4R_1}}{4C_1 V_{BEon}}$$

$$10 \text{ k} - 1 \text{ k} = 9 \text{ kHz} = \frac{4,5 \text{ mA}}{4C_1 V_{BEon}} = 9 \text{ kHz} \Rightarrow C_1 = 179 \text{ nF} \quad (25)$$

$$\frac{\partial f_0}{\partial V_k} = \frac{1}{16R_1C_1 V_{BEon}} = 1 \text{ k} \Rightarrow R_1 \approx 500 \Omega \quad (25)$$

$$I_1 = 4C_1 V_{BEon} \cdot f_0 (1 \text{ k}) = 0,5 \text{ mA}$$

$$R = \frac{0,7}{2 \cdot 0,5 \text{ m}} = 0,7 \text{ k} \quad (25)$$

$$b) -4,5 \leq V_k < 4,5 \quad (25)$$