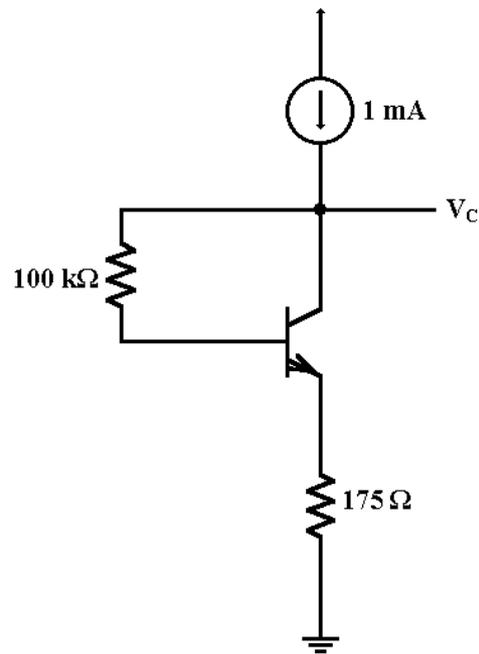


### 4.65

(α)

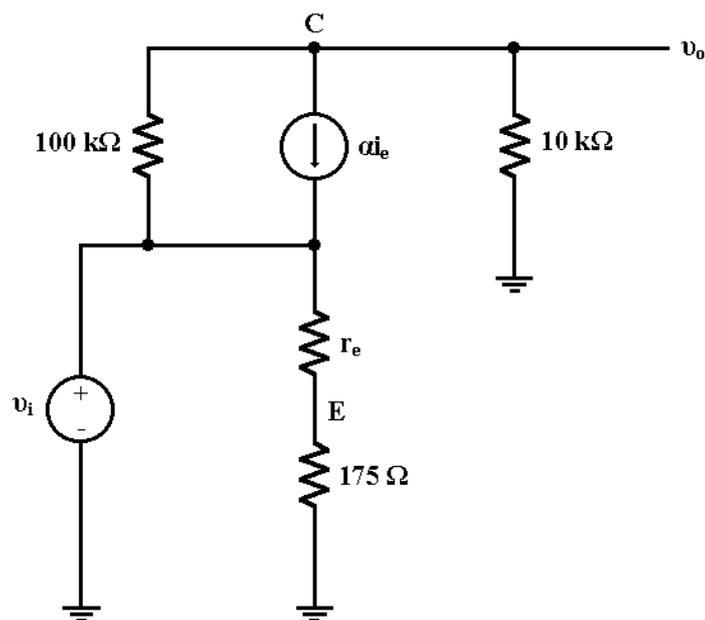


Έχουμε ότι:

$$I_B + I_C = 1 \text{ mA} \Rightarrow \frac{I_C}{\beta} + I_C = 1 \text{ mA} \Rightarrow I_C = \frac{\beta}{\beta + 1} \cdot 1 \text{ mA} = 0.99 \text{ mA} \quad (1)$$

$$V_C = I_B R_B + V_{BE} + I_E R_E = I_B R_B + V_{BE} + (I_B + I_C) R_E = 1.875 \text{ V} \quad (2)$$

(β)



Έχουμε ότι:

$$i_e = \frac{v_i}{r_e + R_E} = \frac{v_i}{\frac{V_T}{I_E} + R_E} = \frac{v_i}{25 + 175} = \frac{v_i}{200 \Omega} \quad (3)$$

Από τη σχέση των ρευμάτων στον κόμβο C έχουμε:

$$\frac{v_o - v_i}{100 \text{ k}\Omega} + \alpha i_e + \frac{v_o}{10 \text{ k}\Omega} = 0 \Rightarrow \frac{v_o}{v_i} = -44.9 \text{ V/V} \quad (4)$$