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3. a. Syarat agar suatu rangkaian elektronik dapat berosilasi adalah kriteria Barkhausen (Barkhausen criterion)

$$\beta A = 1$$

b.

$$f_0 = \frac{1}{2\pi\sqrt{R_1 C_1 R_2 C_2}}$$

$$50\,kHz = \frac{1}{2\pi\sqrt{1k.C_1 . 1k.C_2}} \leftarrow C_1 = C_2 = C$$

$$50 \times 10^3 = \frac{1}{2\pi\sqrt{C^2 . 10^6}}$$

$$50 \times 10^3 = \frac{1}{2\pi . C . 10^3}$$

$$C = 3,18 \times 10^{-9}\,F$$

$$C = 318\,pF$$

c. $$\frac{R_3}{R_4} = \frac{R_1}{R_2} + \frac{C_2}{C_1}$$

$$\frac{R_3}{R_4} = \frac{1k}{1k} + \frac{3,18\,nF}{3,18\,nF}$$

$$\frac{R_3}{R_4} = 2$$

$$R_3 = 2R_4$$