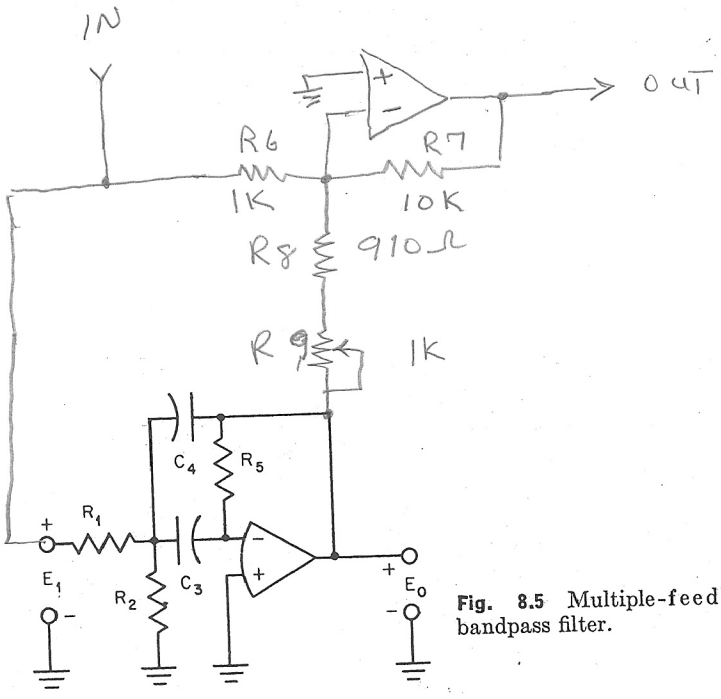

Fig. 8.5 Multiple-feedback bandpass filter.

Active Filters

DESIGN PROCEDURE

Given: H_o, $Q = \frac{1}{\alpha}$, $\omega_o = 2\pi f_o$

Choose: $C = C_3 = C_4$

Calculate: $Q = \frac{1}{\alpha}$

$$R_1 = \frac{Q}{H_o \omega_o C} = \frac{R_5}{2H_o}$$

$$R_2 = \frac{Q}{(2Q^2 - H_o)\omega_o C}$$

$$R_5 = \frac{2Q}{\omega_o C}$$

$f_o = 1\,kHz$

$H_o = 1$

$Q = 5$

$C = C_4 = C_5 = .1\,\mu F$

$$R_5 = \frac{2 \cdot 5}{2\pi \cdot 10^3 \cdot 10^{-7}} = 15{,}915\,\Omega$$

$$R_2 = \frac{5}{(2 \cdot 5^2 - 1) \cdot 2\pi \cdot 10^3 \cdot 10^{-7}} \approx 162\,\Omega$$

$$R_1 = \frac{R_5}{2} = 7{,}958\,\Omega$$