VOLTAGE GAINS

A_{MAX} = MAX PASSBAND GAIN = 0.5 dB = 1.0593

A_{MIN} = MIN STOPBAND GAIN = −40 dB = 0.01

$$1.0593 = \sqrt{1+\varepsilon^2}$$

$$\therefore \varepsilon^2 = 0.1221 \qquad \varepsilon = 0.3495$$

STOPBAND FREQ = 1000 Hz = 6284 RAD/SEC

PASSBAND FREQ = 200 Hz = 1257 RAD/SEC

$$H(j\omega) = \frac{H_0}{\sqrt{1+\varepsilon^2\left(\frac{\omega_s}{\omega_p}\right)^{2n}}}$$

$$0.01 = \frac{1}{\sqrt{1+0.1221\times\left(\frac{6284}{1257}\right)^{2n}}}$$

$$(100)^2 = 1 + 0.1221 \times 5.0^{2n}$$

$$5.0^{2n} = \frac{10^4}{0.1221} = 81900$$

$$5.0^n = \sqrt{81900} = 286.2$$

$$n = \frac{\log 286.2}{\log 5}$$

$$n = 3.51 \qquad \text{ORDER} = 4$$

TWO SECOND ORDER