

#Jenny



Finally I get this ebook, thanks for all these I can get now!

#Rio



Cool! I'am really happy

#Markus Jensen



I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook

#Hun Tsu



wtf this great ebook for free?!

#Che Salsa



My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler



so many fake sites. this is the first one which worked! Many thanks

Schaumann: Design of Analog Filters
Chapter 1: Introduction

Introduction 1-1

1.1 The gain $G = 20 \log_{10}(V_2) = 20 \log_{10}(3.3) = 14.55$ dB
Phase shift $\Delta \phi = \theta_2 - \theta_1 = 180^\circ - 125.7^\circ$

1.2 At 12 kHz, the gain of the filter is $G = 10^{1.5} = 1.229 \times 10^4$
 \Rightarrow The magnitude of output signal is $V_2 = G \cdot V_1 = 1.229 \times 10^4 \times 125.9 \mu\text{V}$

1.3 $\sigma = 20 \log_{10}(e) \times 10^{-3} [900 \times 10^{-3}] = 20 \log_{10}(2.5 \times 10^3) = -66.94$ dB

1.4 The gain is $G = 10^{1.5} = 1.229 \times 10^4$, $\Delta Z = 56.25 \angle -42^\circ$, hence the output signal is
 $V_2 = G \cdot V_1 = 1.229 \times 10^4 \times 10 \angle -42^\circ = 122.9 \angle -42^\circ$
 $\Rightarrow V_2(t) = 122.9 \cos(\omega t - 42^\circ)$

1.5 (a) Lowpass. Transition bandwidth $\text{BW}_T = 9.8 - 3.4 = 6.2$ kHz
(b) Bandpass. Transition bandwidth $\text{BW}_T = 12.5 - 7 = 5.5$ kHz, $\text{BW}_M = 40 - 24 = 16$ kHz
(c) Bandstop. Transition bandwidth $\text{BW}_T = 12.5 - 7 = 5.5$ kHz, $\text{BW}_M = 40 - 24 = 16$ kHz
(d) Highpass. Transition bandwidth $\text{BW}_T = 48 - 24 = 24$ kHz
(e) Lowpass. Transition bandwidth $\text{BW}_T = 600 - 300 = 300$ kHz
(f) Bandpass. Transition bandwidth $\text{BW}_T = 1000 - 750 = 250$ kHz, $\text{BW}_M = 7.8 - 2.4 = 5.4$ MHz

1.6 At $\omega_c = 0$, hence the gain is $20 \log_{10}(1) = 20 \log_{10}(0.32) = -20 \log_{10}(3.125) = -25.41$ dB
At high frequencies $\angle [1 + j\omega R_1 C_1] = \omega^\alpha$, attenuation $a(\omega) = 20 \log_{10}(1/\omega^\alpha) = -40 \log_{10}(\omega)$ increases 40 dB per decade.
When $\omega = \infty$ (infinite), attenuation is infinite.

1.7 In this problem's solution, denormalized component values are denoted by "n".
Denormalized parameters are $R_1^n = R_1$, $R_2^n = R_2$, $L_1^n = \frac{R_1}{\omega_c} L_1$, and $C_1^n = C_1 / (\omega_c R_1)$, therefore $R_1^n = 300$ Ω , $R_2^n = 300$ Ω , $L_1^n = 5.547$ μH , $L_2^n = 4.385$ μH , $L_3^n = 3.875$ μH , $C_1^n = 126.0$ μF , $C_2^n = 77.44$ μF

1.8 In this problem's solution, denormalized component values are denoted by "n". Since denormalized capacitance is $C_1^n = C_1 / (\omega_c R_1)$, where R_1 is the normalization resistor, we have
 $R_1^n = \frac{R_1}{\omega_c} = \frac{1}{0.35} = 2.857$ $\text{k}\Omega$
 $R_2^n = \frac{R_2}{\omega_c} = \frac{20 \times 300 \times 10^3}{0.35} = 1.714$ $\text{M}\Omega$
normalize the denormalized resistors as
 $R_1^n = R_1 = 2.857 \times 10^3 = 2.857$ $\text{k}\Omega$
 $R_2^n = R_2 = 1.714 \times 10^6 = 1.714$ $\text{M}\Omega$
 $C_1^n = C_1 = 8.888 \times 10^{-6} = 8.888$ μF
 $C_2^n = C_2 = 46.59$ μF

Copyright Oxford University Press

[Download PDF version of :](#)
Analog Filters Schaumann Solution Manual