

EE202 Homework 7

- (1) Find the cutoff frequency ω_c for the RL filter shown in Fig.1. If $v_i = 10 \cos \omega t$ (V), write the steady state expression for v_0 when $\omega = \omega_c$ and $\omega = 3\omega_c$.

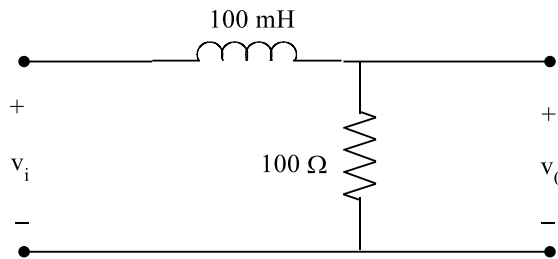


Fig.1.

- (2) Use a 20 mH inductor to design a low-pass RL filter with a cutoff frequency of $500/\pi$ Hz.

- (a) Specify the value of the resistor.
(b) A load having a resistance of 20Ω is connected across the output terminals of the filter. What is the cutoff frequency of the loaded filter in hertz?

- (3) Find the frequency response $H(j\omega)$ and cutoff frequency ω_c of the low-pass filter shown in Fig.2. If $v_i = 100 \cos \omega t$ (V), write the steady state expression for v_0 when $\omega = \omega_c$ and $\omega = 5\omega_c$.

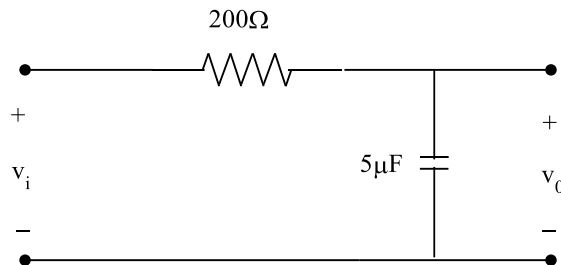


Fig.2.