From (12.41), the DC input current is

$$I_I = \frac{8}{\pi^2 + 4}\frac{V_I}{R_i} = 0.5768 \times \frac{100}{72.1} = 0.8\ \text{A}. \tag{12.106}$$

The maximum switch current obtained using (12.42) is

$$I_{SM} = \left(\frac{\sqrt{\pi^2 + 4}}{2} + 1\right) I_I = 2.862 \times 0.8 = 2.29\ \text{A}. \tag{12.107}$$

The amplitude of the current through the resonant circuit computed from (12.45) is

$$I_m = \frac{I_I\sqrt{\pi^2 + 4}}{2} = 1.8621 \times 0.8 = 1.49\ \text{A}. \tag{12.108}$$

Assuming $Q_L = 7$ and using (12.31), (12.49), and (12.52), the component values of the load network are:

$$L = \frac{Q_L R_i}{\omega} = \frac{7 \times 72.1}{2\pi \times 1.2 \times 10^6} = 66.9\ \mu\text{H} \tag{12.109}$$

$$C_1 = \frac{8}{\pi(\pi^2 + 4)\omega R_i} = \frac{8}{2\pi^2(\pi^2 + 4) \times 1.2 \times 10^6 \times 72.1} = 338\ \text{pF} \tag{12.110}$$

and

$$C = \frac{1}{\omega R_i\left[Q_L - \frac{\pi(\pi^2-4)}{16}\right]} = \frac{1}{2\pi \times 1.2 \times 10^6 \times 72.1(7 - 1.1525)} = 315\ \text{pF}. \tag{12.111}$$

It follows from (12.33) that in order to keep the current ripple in the choke inductor below 10% of the full-load DC input current I_I, the value of the choke inductance must be greater than

$$L_f = 2\left(\frac{\pi^2}{4} + 1\right)\frac{R_i}{f} = \frac{7 \times 72.1}{1.2 \times 10^6} = 420.5\ \mu\text{H}. \tag{12.112}$$

The peak voltages across resonant capacitor C and inductor L are

$$V_{Cm} = \frac{I_m}{\omega C} = \frac{1.49}{2\pi \times 1.2 \times 10^6 \times 315 \times 10^{-12}} = 627.4\ \text{V} \tag{12.113}$$

and

$$V_{Lm} = \omega L I_m = 2\pi \times 1.2 \times 10^6 \times 66.9 \times 10^{-6} \times 1.49 = 751.6\ \text{V}. \tag{12.114}$$

Assume that the DC ESR of the choke L_f is $r_{Lf} = 0.15\ \Omega$. Hence, from (12.54) the power loss in r_{Lf} is

$$P_{rLf} = r_{Lf} I_I^2 = 0.15 \times 0.8^2 = 0.096\ \text{W}. \tag{12.115}$$