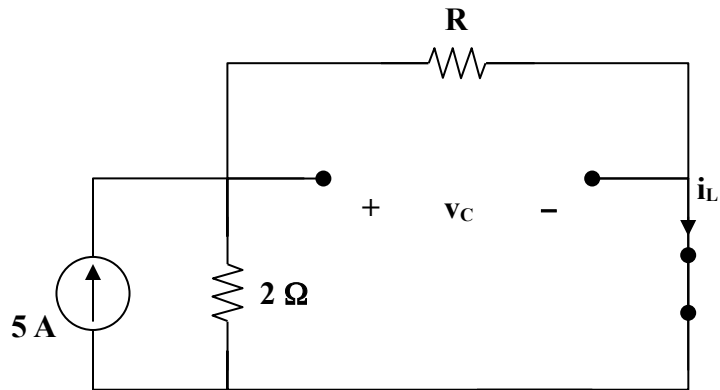


### Chapter 6, Solution 47.

Under dc conditions, the circuit is equivalent to that shown below:



$$i_L = \frac{2}{R+2}(5) = \frac{10}{R+2}, \quad v_c = Ri_L = \frac{10R}{R+2}$$

$$w_c = \frac{1}{2}Cv_c^2 = 80 \times 10^{-6} \times \frac{100R^2}{(R+2)^2}$$

$$w_L = \frac{1}{2}Li_L^2 = 2 \times 10^{-3} \times \frac{100}{(R+2)^2}$$

If  $w_c = w_L$ ,

$$80 \times 10^{-6} \times \frac{100R^2}{(R+2)^2} = \frac{2 \times 10^{-3} \times 100}{(R+2)^2} \longrightarrow 80 \times 10^{-3}R^2 = 2$$

$$R = 5\Omega$$