

**PROBLEM SET #15****Chapter 14, Solution 5.**

$$(a) \text{ Let } Z = R // sL = \frac{sRL}{R + sL}$$

$$V_o = \frac{Z}{Z + R_s} V_s$$

$$H(s) = \frac{V_o}{V_s} = \frac{Z}{Z + R_s} = \frac{\frac{sRL}{R + sL}}{R_s + \frac{sRL}{R + sL}} = \frac{sRL}{RR_s + s(R + R_s)L}$$

**Chapter 14, Solution 7.**

$$\begin{aligned} (a) \quad 0.05 &= 20 \log_{10} H \\ 2.5 \times 10^{-3} &= \log_{10} H \\ H = 10^{2.5 \times 10^{-3}} &= \underline{\underline{1.005773}} \end{aligned}$$

**Chapter 14, Solution 8.**

$$\begin{aligned} (d) \quad H(j) &= \frac{3}{1+j} + \frac{6}{2+j} = 3.9 - j2.7 = 4.743 \angle -34.7^\circ \\ H_{dB} &= 20 \log_{10} 4.743 = \underline{\underline{13.521}}, \quad \phi = \underline{\underline{-34.7^\circ}} \end{aligned}$$