2. Coaxial cable.

$$C = \frac{2\pi\varepsilon}{\ln(b/a)} = 95\,\text{pF/m}\,;\; L = \frac{\mu\varepsilon}{C} = 264.3\,\text{nH/m}$$

The loss tangent is 10^{-3} at 10 MHz, thus

$\frac{\sigma}{\omega\varepsilon} = 10^{-3} \to \sigma = 1.2556\,\mu\text{S/m}$. It follows that

$$G = \frac{\sigma}{\varepsilon} C = 5.97\,\mu\text{S/m}$$

Then, $Z_0 = 52.75 + j0.026\ \Omega$, $\gamma = .002 + j0.3148$

If it is lossless (G=0), $Z_0 = 52.75\ \Omega$, $\gamma = j0.3148$

3. $Z_0 = \sqrt{\frac{L}{C}} = 50$; $\beta = \omega\sqrt{LC} = 6\pi$; $u = \frac{\omega}{\beta} = \frac{1}{\sqrt{LC}} = 200\ \text{m}/\mu\text{s}$

Z_{in}= 49.1045 +j35.0258, V_i = 7.2424 + j1.3034 V, I_i = 0.1103 - j0.0521, $P_{av,line}$ = 0.3655 W

$V_0^+ = 6.3788 - j0.6517, V_0^- = 0.8636 + j1.9551$, V_L = -7.3915 - j4.2962, I_L = -0.0739 - j0.0430

$P_{av,load}$ = 0.3655 W

4. $Z_0 = \sqrt{\frac{L}{C}} = 50$; $\beta = \omega\sqrt{LC} = 20\pi$

Z_{in} = 100, V_i = 20 V, I_i = 0.2, $P_{av,line}$ = 2 W

$V_0^+ = 15, V_0^- = 5$, V_L = 20, I_L = 0.2, $P_{av,load}$ = 2 W