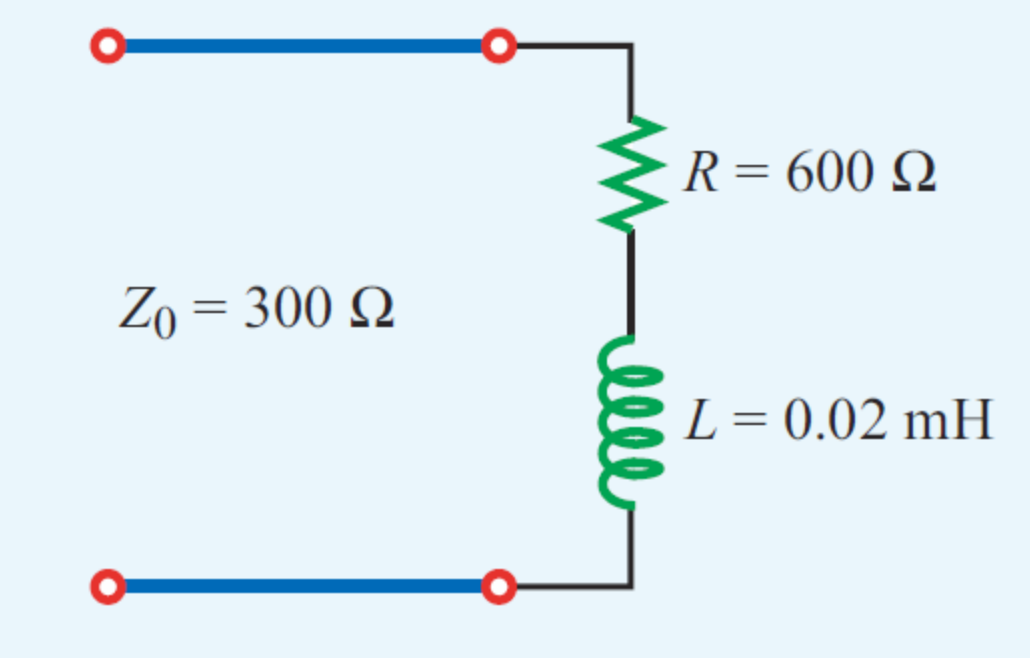
HW6 due to 11/16 (submit online at NTUCOOL before 9 am)

1. (a)(problem 2.20) A 300 Ω lossless air transmission line is connected to a complex load composed of a resistor in series with an inductor shown below. At 5 MHz, determine the reflection coefficient (Γ) at the load. (b) Use ADS to compare your results. Plot the reflection coefficient spectrum from 1 MHz to 10 MHz and point out the S11 in linear scale at 5 MHz



2. (problem 2.9) (a) A lossless microstrip line uses a 1 mm wide conducting strip over a 1 cm thick substrate with $\varepsilon_r = 2.5$, Determine the line parameters, ε_{eff}, Z_0, and β at 10 GHz based on equations (2.35)-(2.40) (b) Use ADS to compare your result and show the reflection/transmission spectrum (S11, S21 in linear scale) (c) Use CST to compare your result and show the reflection/transmission spectrum (S11, S21 in linear scale).