Study Material

Text Book
Elements of Electromagnetics, 6th Ed.
Matthew N. O. Sadiku
Oxford University Press

Study Transmission Lines
Read Chapter 11, pp. 534–554.

Work Problems

Problem #1
Write the names of each of the following transmission lines.

Problem #2
A 75 Ω transmission line is connected to an antenna. The reflection coefficient at the antenna is 0.33.
   a. What is the impedance of the antenna?
   b. What fraction of power is fed into the antenna?
   c. What is the standing wave ratio (SWR) in the transmission line feeding the antenna?
   d. What must be done to make this configuration more efficient?

Problem #3
A transmission line with \( C = 16 \text{ pF/m} \) and \( L = 90 \text{ nH/m} \) operates at 5.6 GHz and is connected to a 50 nF capacitor as the load.

   a. What is the input impedance to the transmission line if the length of the line is 6.0 cm?
   b. Is the input impedance inductive, capacitive, or resistive?
   c. What value inductor, capacitor, or resistor does the input impedance act like?