

Oct. 8th, 2012



EE214000 Electromagnetics, Fall
Quiz #2, Open books, notes (16 points)

1. A transmission line of characteristic impedance Z_0 is connected to a quarter-wave transmission line with an input impedance of Z_{in} . (1) What is the condition for the transmission line to have no reflection at the connecting point? (2 points) (2) Suppose the quarter-wave transmission line is terminated with a load impedance of Z_L , what is the characteristic impedance of the quarter-wave line to satisfy the no-reflection condition? (3 points)

Ans: (a) $Z_{in} = Z_0$ (b) $\sqrt{Z_0 Z_L}$

2. What is the length separation (in unit of the wavelength) between two standing-wave nodes in a transmission line? (2 point)

Ans: Half wavelength

3. What is the standing wave ratio of a shorted transmission line? (2 points)

infinity

4. What is the reflection phase of the voltage for a shorted transmission line? (2 points)

180°

5. How do you measure the characteristic impedance of a transmission line? Don't just show a few formulas. Give a description (5 points)

Refer to pages 37-38 of the handout