

LE 433 Assignment #2

1. A lossless transmission line is 80 cm long and operates at a frequency of 600 MHz. The line parameters are $L = 0.25 \mu\text{H/m}$ and $C = 100 \text{ pF/m}$. The voltage source $V_g = 10 \text{ V}$ and the generator impedance $Z_g = 50 \Omega$. Find

- (a) the characteristic impedance
- (b) the phase constant
- (c) the velocity on the line
- (d) the input impedance for $Z_L = 100 \Omega$
- (e) the current at the load
- (f) the power delivered to the load

2. A lossless transmission line is 100 m long and operates at a frequency of 100 MHz. The line parameters are $L = 5 \mu\text{H/m}$ and $C = 2 \text{ nF/m}$. The voltage source $V_g = 30 \text{ V}$ with the generator impedance $Z_g = 50 \Omega$ is connected to a $100\text{-}\Omega$ load via this transmission line. Find

- (a) the input impedance
- (b) the current at the load
- (c) the power delivered to the line
- (d) the power delivered to the load