A 50-Ω lossless line is terminated with a load impedance \( Z_L = (50+j50) \Omega \).

(a) Calculate \( \Gamma \) and \( S \).

(b) Find a value for \( l_{max} \) where there is the first voltage maximum assuming a wavelength \( \lambda \) of the signal.

c) Calculate the input impedance for the transmission line of length \( l_{max} \).

d) Now add a second transmission line of length \( l_1 \) and impedance \( Z_{0,1} \). Choose values for \( l_1 \) (in terms of \( \lambda \)) and impedance \( Z_{0,1} \) so that the input impedance at point C would match a 50-Ω transmission line.

e) Assuming that the two transmission lines shown in (d) are connected to a 50-Ω transmission line that is connected to a signal generator (\( Z_g = 50 \Omega \) and \( V_g = 10 \) V), how much power is being delivered to the load?