**EE 5306 Homework #2**

1. Consider the four 2-port networks shown below. Derive the scattering matrix for all the cases when *f*=1 GHz. Assume Zo=50

R = 25

Port #1

Port #2

C = 3pF

R = 25

Port #1

Port #2

Figure (a) Figure (b)

R = 8.57 

R = 8.57 



Zo=75 Ohms

L= λ/8

Port #2

Port #1

Port #2

Port #1

R = 3

Figure (c) Figure (d)

2- Design a g/4 microstrip transmission line at 2.45 GHz with a 50 characteristic impedance. The substrate thickness is 31 mils, with r=2.55. Suppose now that the microstrip line is connected before the resistor from Figure (a). Determine the scattering matrix at 2.45 GHz.

R = 25

Port #1

Port #2

MLIN