1. Find the input impedance, the load reflection coefficient and the VSWR in a transmission line having an electrical length of 45°, characteristic impedance of 50Ω, and terminated in a load $Z_L=50+j50$ Ω.

2. A load $Z_{LOAD}=10+j10$ Ω is to be matched to a 50-Ω line. Design two matching networks and specify the value of L and C at a frequency of 500MHz.