Menoufia University
Faculty of Electronic Engineering
Electronics and Electrical Commun. Eng. Dept.
Third Year – Spring 2018
ECE 323 - Microwave Engineering
Problem Set #3

Smith Chart

[P1] Use the Smith chart to find the following quantities for a T-line with $Z_0 = 50\ \Omega$, $f = 600$ MHz, and $Z_L = 60 + j50\ \Omega$. The speed of propagation on the T-line is c.

   (a) The reflection coefficient at the load.

   (b) The reflection coefficient at a distance of 20 m from the load toward the generator.

   (c) Input impedance at 20 m from the load.

   (d) The SWR on the line.

   (e) The distance from the load to the first voltage maximum and first voltage minimum.

   (f) The distance from the load to the first current maximum and first current minimum.

   (g) The load admittance.

[P2] Repeat **P1** on Problem set #2 using Smith chart.

[P3] **2.21**- Use the Smith chart to find the shortest lengths of a short-circuited 75 Ω line to give the following input impedance:

   (a) $Z_{in} = 0$.

   (b) $Z_{in} = \infty$.

   (c) $Z_{in} = j75$.

   (d) $Z_{in} = -j50$.

   (e) $Z_{in} = j10$.