

**ECE 300**  
**Spring Semester, 2003**  
**HW Set #12**

**Due: April 28, 2003**

wlg

Name \_\_\_\_\_  
**Print (last, first)**

Use engineering paper. Work only on one side of the paper. Use this sheet as your cover sheet, placed on top of your work and stapled in the top left-hand corner. Number the problems at the top of the page, in the center of the sheet. **Do neat work. Underline your answers. Show how you got your equations. Be sure to show how you got your answers.**

The following problems are required for HW Set 12: Each problem counts 15 points.

15.2  $y_{11} = (1/6) S$ ,  $y_{12} = -(1/12) S$ ,  $y_{21} = -(1/12) S$ ,  $y_{22} = (1/6) S$

15.5  $y_{11} = (1/Z_1) S$ ,  $y_{22} = 0$ ,  $y_{21} = (\alpha/Z_2) S$ ,  $y_{12} = (1/Z_2) S$

15.12  $z_{11} = 400$  ohms,  $z_{12} = 15$  ohms,  $z_{21} = 6$  ohms,  $z_{22} = 50$  ohms

15.18 
$$\frac{V_2}{V_s} = \frac{h_{21}R_L}{h_{12}h_{21}R_L - (1 + h_{22}R_L)(R_1 + h_{11})}$$

11.8 Prepare the straight line Bode (magnitude only) using semi-log paper. Verify your answer with a MATLAB program. Include a copy of your program and printout of the plot.

The following problems are optional. That is, they are not required to be turned in on the date above. However, you will receive 15 points for working each problem as **extra credit**.

11.15 Prepare the straight line Bode (magnitude only) using semi-log paper. Verify your answer with a MATLAB program. Include a copy of your program and printout of the plot.

11.36  $Q = 100$ ,  $L = 1.59$  mH,  $C = 1.59$  nF

11.39  $L = 19.5$  mH,  $BW = 256$  rad/sec,  $Q = 6.25$