ECE 301
Fall Semester, 2002
HW Set #1

Due: September 3, 2002 **Name** _____
wlg (wlg@utk.edu) **Print (last, first)**

You should work all of the following problems from the text. The problems with an asterisk are to be turned in for grading. 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 comer. 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.** Each problem counts 10 points. **Be sure to show how you got your answers.**

2.8 Ans: $I_2 = 6A$, $I_3 = 2$ A

***2.18** Missing information: In, through element 4 is 1 A, down.
Ans: $V_A = 15$ V, positive at the top. A supplies 75 W, B supplies 25 W, C absorbs 50 W, D absorbs 40 W, E absorbs 10 W.

2.24 Ans: R = 220.4 ohms, η = efficiency = P_o, optical/Pa = 2.009%

2.37 Ans: (a) $V_{out} = 2.75$ V, (b) $V_{out,min} = 2.375$ V, $V_{out,max} = 2.625$ V

2.38 $R_{eq} = 11.4$ ohms

***2.42** Ans: (a) $R_{eq} = 47$ ohms, (b) $I_{90} = 1.22$ A, $P_{90} = 134.4$ W

2.44 Ans: $R_{max} = 2.346$ ohms, AWG = #8

***2.49** Ans: $V_{AB} = -1.416$ V

2.61 Ans: $r_m = 1.55$ Mohms

***2.63** Ans: Without meter: (a) $V_{R4} = 3.08$ V, (b) $V_{R4} = 30.47$ V, (c) $V_{R4} = 269.9$ V
(d) $V_{R4} = 1260.7$ V

With meter: (a) $V_{R4} = 3.08$ V, (b) $V_{R4} = 30.47$ V, (c) $V_{R4} = 272.5$ V
(d) $V_{R4} = 1725$ V