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HOMEWORK ASSIGNMENT 5

HOMEWORK DUE FEBRUARY 19, 2003 BEFORE CLASS:

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1. PSPice Problem 1:

    a. Complete the PSpice Tutorial I (on our Web site). Please use PSpice Version 9.2 if possible (PSpice CDs have been provided and more are available). Also, as noted, PSpice 9.2 is available on all SEASnet PCs.

    b. Solve for the power absorbed (dissipated) by the sources in the circuit shown below. Note that the currents in the sources are i_a = 0.1A, i_b = 1A, and i_c = 10A.

    c. Submit your problem by providing a hardcopy of the power dissipation data. This would be just as shown in Figures 32 and 33 of the PSpice Tutorial I.

    d. This is a small variant of the problem solved in the Tutorial I. The intent of this exercise is to familiarize you with the PSpice tool. Next week we will have homework assignments for PSpice directed to other problems.
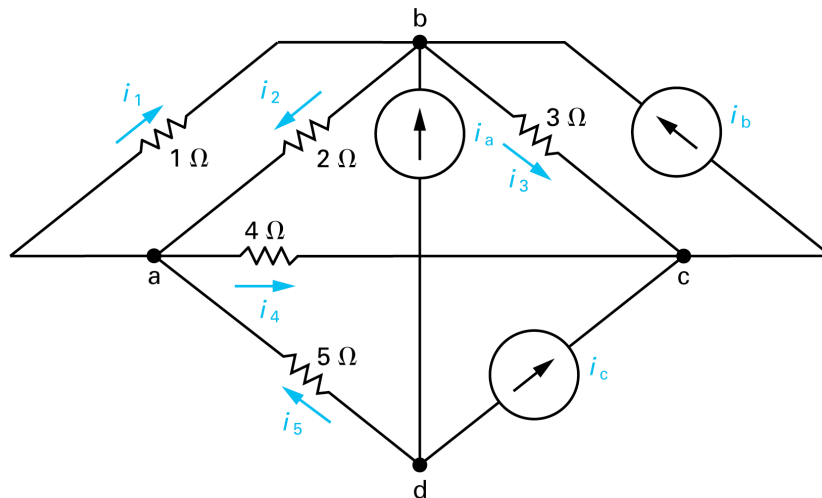
Figure 1. Circuit for PSpice Problem 1. Note: i_a = 0.1A, i_b = 1A, and i_c = 10A.

2. Textbook Problem 4.58 V_{TH} = 45V, R_{TH} = 30Ω

3. Textbook Problem 4.70 V_{TH} = 0 (note there are no independent sources, R_{TH} = 20Ω

4. Textbook Problem 4.74 There are two solutions arising from the two roots of a quadratic equation that you will encounter, R_O = 2.5Ω and 22.5Ω. Hint: for this problem, solve for the Thevinin voltage and resistance for the circuit *connected* to R_O. The Thevinin numerical values are: V_{TH} = 100V, R_{TH} = 7.5Ω Then, use this source equivalent to compute power dissipation in R_O as a function of the R_O value.

5. Textbook Problem 4.87 i_o = 2A , v_O = -136V

Check Web Site for general update and hints on homework