

CASE WESTERN RESERVE UNIVERSITY
Case School of Engineering
Department of Electrical Engineering and Computer Science

ENGR 210. Introduction to Circuits and Instruments (4)

Homework Set No. 4

References: [T&R4] sections 3-1, 3-2, 3-3

Issued 2/2/05

Due 2/9/05

NODE VOLTAGE ANALYSIS

1) (5 pts) Problem 3-6, p. 129.

2) (5 pts) Problem 3-8, p. 130.

This circuit is called a Wheatstone Bridge and is often used for making precise measurements of small changes in resistance.

For information about early Wheatstone bridges check out:

http://physics.kenyon.edu/EarlyApparatus/Electrical_Measurements/Wheatstone_Bridge/Wheatstone_Bridge.html

For a mathematical analysis of the Wheatstone Bridge see:

http://www.efunda.com/designstandards/sensors/methods/wheatstone_bridge.cfm

3) (5 pts) Problem 3-20, p. 132.

MESH CURRENT ANALYSIS

4) (5 pts) Problem 3-14, p. 131.

5) (5 pts) Problem 3-15, p. 131.

6) (5 pts) Problem 3-20, p. 132.

HINT: Don't forget to consider using source transformations and supernodes/supermeshes if nothing else works. Problem 3-15 will show you a different technique.

NOTE: Please put section code AND your CWRU e-mail next to name at top of page. Section codes are

MA (Monday Afternoon)

ME (Monday Evening)

TA (Tuesday Afternoon)

TE (Tuesday Evening)

WA (Wednesday Afternoon)

WE (Wednesday Evening)