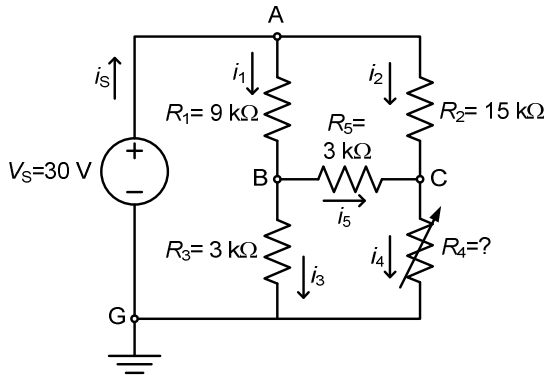


You are allowed to use your lab manual and lab notebook during the quiz.

- (1) (25 points) For the Wheatstone bridge circuit shown, determine the value of the unknown resistor  $R_4$  such that the bridge circuit will be balanced (i.e.,  $i_5=0$ ).



- (2) (50 points) Use the value of  $R_4$  found in part (a) to determine the values of the node voltages  $V_B$  and  $V_C$  and currents  $i_1$  and  $i_2$ . (Please show your work and box each answer. Please also provide appropriate units for your answers.)

- (3) (25 points) Use the value of  $R_4$  found in part (a) to find the total power supplied by the dc voltage source. Please provide the appropriate unit for your answer.