



电子科技大学
格拉斯哥学院
Glasgow College, UESTC

Score

Physical Experiment II

Prelab Report 12

Experiment Title:

The Wheatstone Bridge and the Prototype of
Electric Balance

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Answers to Questions (20 points)

(1)

$$V_G = \left(\frac{R_3}{R_2 + R_3} - \frac{R_1}{R_4 + R_1} \right) V_m$$

(2)

$$V_G = \left(\frac{R_3}{R_2 + R_3} - \frac{R_1}{R_4 + R_1} \right) V_m = \left(\frac{120\Omega}{480\Omega + 160\Omega} - \frac{160\Omega}{80\Omega + 120\Omega} \right) 100V = 35V$$

$$R_4 = \frac{R_3 R_2}{R_1} = \frac{120\Omega \times 480\Omega}{80\Omega} = 720\Omega$$

Thus, the output voltage across points C and D is 35V, and the value of resistor R_4 required to balance the bridge circuit is 720 Ω .