

3.

$$\Delta R = R_{S_0} \in k = \frac{5000}{14970.26} (2.973) (20) \\ = 29.739 \Omega$$

$$U_0 = 10 \left(\frac{4970.26}{14970.26} - \frac{5000}{15000} \right) \\ = 10 \left(0.332 - 0.333 \right) = -0.01333 V \\ \{ U_0 = -1.333 \text{ mV} \} \quad \text{Ans.}$$

b. If the Wheatstone Bridge was initially at 20°C and the straingauge / Load cell was used at temp. of 30°C

Calculate the error in Reading of U_0 if the Strain gauge had a thermal coefficient of ($\alpha = 1 \times 10^{-4}/\text{C}$)

$$R = R_0 (1 + \alpha T)$$

Solution.

$$\Delta R_S = \Delta R_{\text{Strain}} + \Delta R_{\text{Thermal}}$$