

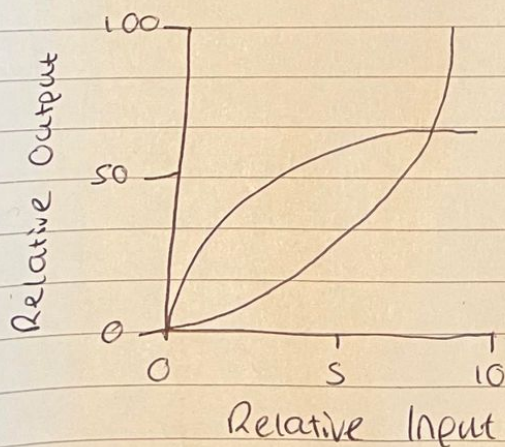
d) i) $\frac{C}{R} = (75 \times 10^{-3}) \times (150 \times 10^{-3}) \times 100 \times 1.78$

$$\frac{C}{R} = 2.0025 \text{ cm/rad}$$

ii) Angular Displacement = $R = \frac{12.75}{2.0025} = 6.37 \text{ rad}$

iii) A Wheatstone Bridge is a divide bridge circuit that is used for the measurement of static or electrical resistance. In this system it is measuring the electrical resistance of the circuit.

e) Nonlinearity is the behavior of a circuit, where the output signal strength does not vary in direct proportion to the input signal strength. Meaning the signals are fully on or fully off.



X Midpoint Equation

$$x_m = \left(\frac{x_{\max} - x_{\min}}{2} \right) + x_{\min}$$

Y Midpoint Non-linearity

$$\% \text{ linearity} = \left| \frac{\left(\frac{y_{\max}}{2} \right) - y_s}{\left(\frac{y_{\max}}{2} \right)} \right| \times 100\%$$