



**ALUMNO(A): ZULIBETH VAZQUEZ NORIEGA**

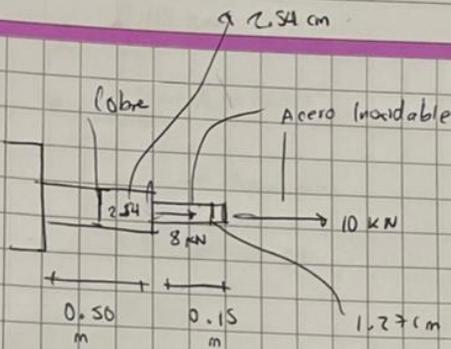
**DOCENTE: PEDRO ALBERTO GARCÍA**

**MATERIA: RESISTENCIA DE MATERIALES DE CONSTRUCCIÓN**

**ACTIVIDAD: ESFUERZO Y DEFORMACIÓN**

**CUATRIMESTRE: 4**

**GRUPO: A**



$$AB = P = 8 \text{ kN}$$

$$E = 120.7 \text{ GPa}$$

$$E = 1.207 \times 10^{10}$$

$$A = \frac{\pi \cdot \cancel{2.54^2} \cdot 2.54}{4}$$

$$A = 5.067 \times 10^{-4} \text{ m}^2$$

$$\frac{\sum P_i L_i}{AE}$$

$$\delta = \frac{8 \text{ kN} (0.50)}{5.067 \times 10^{-4} (1.207 \times 10^{10})}$$

$$\delta = 6.5404 \times 10^{-7}$$

$$BC = P = 10 \text{ kN} + 8 \text{ kN} = 18 \text{ kN}$$

$$A = \frac{\pi \cdot 3.1416 (1.27)^2}{4}$$

$$A = 1.267 = 0.001267 \text{ m}^2$$

$$\delta = \frac{18 \text{ kN} (0.15)}{0.001267 (1.896 \times 10^{10})}$$

$$\delta = 1.1239 \times 10^{-6}$$

$$L = 0.15$$

$$E = 189.6 \text{ GPa}$$

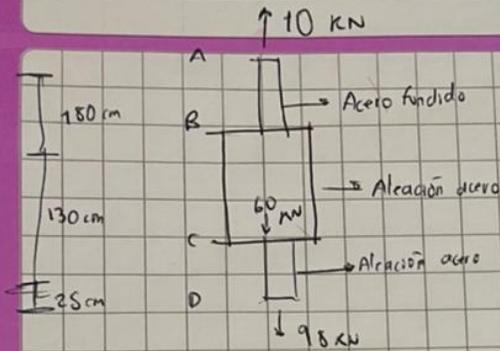
$$E = 1.896 \times 10^{10}$$

$$\delta_{AB} = 6.5404 \times 10^{-7}$$

$$\delta_{BC} = 1.1239 \times 10^{-6}$$

$$\delta = 6.5404 \times 10^{-7} + (1.1239 \times 10^{-6})$$

$$\delta_g = 1.77794 \times 10^{-6}$$



AB

$$P = 10 \text{ kN}$$

$$A = 4.657 \times 10^{-03} \rightarrow 0.00466 \text{ m}^2$$

$$L = 1.80 \text{ m}$$

$$E = 103.4 \text{ gpa} \rightarrow 1.034 \times 10^{11} \text{ N/m}^2$$

$$\delta = \frac{PL}{AE}$$

$$\delta = \frac{10 \text{ kN} (1.80 \text{ m})}{0.00466 \text{ m}^2 (1.034 \times 10^{11} \text{ N/m}^2)}$$

$$\delta = \frac{18 \text{ kN}\cdot\text{m}}{48184400 \text{ m}^2\cdot\text{N/m}^2}$$

$$\delta = 3.735 \times 10^{-08}$$

CD

$$P = 10 \text{ kN} - 60 \text{ kN} - 98 \text{ kN} \rightarrow 148 \text{ kN}$$

$$A = 0.00283 \text{ m}^2$$

$$L = 0.25 \text{ m}$$

$$E = 206.8 \text{ gpa} \rightarrow 2.068 \times 10^{11} \text{ N/m}^2$$

$$\delta = \frac{PL}{AE}$$

$$\delta = \frac{148 \text{ kN} (0.25 \text{ m})}{0.00283 \text{ m}^2 (2.068 \times 10^{11} \text{ N/m}^2)}$$

$$\delta = -6.322 \times 10^{-07}$$

BC

$$P = 10 \text{ kN} - 60 \text{ kN} \rightarrow -50 \text{ kN}$$

$$A = 0.0323 \text{ m}^2$$

$$L = 1.30 \text{ m}$$

$$E = 206.8 \text{ gpa} \rightarrow 2.068 \times 10^{11} \text{ N/m}^2$$

$$\delta = \frac{-50 \text{ kN} (1.30 \text{ m})}{0.0323 \text{ m}^2 (2.068 \times 10^{11} \text{ N/m}^2)}$$

$$\delta = \frac{65 \text{ kN}\cdot\text{m}}{6679640000 \text{ m}^2\cdot\text{N/m}^2}$$

$$\delta = -9.731 \times 10^{-09}$$

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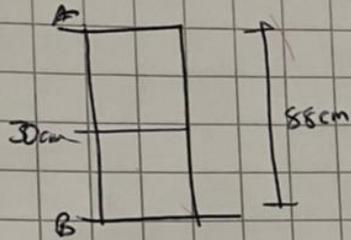
$$AB = 3.735 \times 10^{-08}$$

$$BC = -9.731 \times 10^{-09}$$

$$CD = -6.322 \times 10^{-07}$$

$$-6.04581 \times 10^{-07}$$

$$\delta = -9.731 \times 10^{-09}$$



$$P = -25 \text{ kN}$$

$$A = 0.070 \text{ m}^2$$

$$L = 88 \text{ cm} \rightarrow 0.88 \text{ m}$$

$$E = 210 \text{ kg/cm}^2 \rightarrow 300000 \text{ kg/cm}^2$$

$$\frac{\delta PL}{AE}$$

$$\frac{\delta = -25 \text{ kN}(0.88 \text{ m})}{0.070 \text{ m}^2 (300000)}$$

$$\delta = \frac{-22 \text{ kNm}}{21000}$$

$$\delta = -1.0477 \times 10^{-3}$$