

$$\mu = 4 \cdot 10^{-3} \frac{NS}{m^2}$$

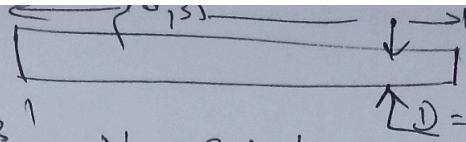
$$\rho = 10^3 \text{ kg/m}^3$$

$$P_1 = 120 \text{ mm Hg} \quad P_2 = ?$$

$$V = 0.2 \text{ m/s}$$

$$D = 9 \text{ mm}$$

التمرین 8



$$\dot{Q} = \frac{\pi D^4}{128 \mu} \left(\frac{\Delta P}{l} - \rho g \sin \theta \right)$$

$$\frac{\Delta P}{l} = \frac{128 \mu \dot{Q}}{\pi D^4} + \rho g \sin \theta$$

$$\dot{Q} = VS = V \frac{\pi D^2}{4}$$

$$\frac{\Delta P}{l} = \frac{128 \mu V \pi D^2}{4 \pi D^4} + \rho g \sin \theta = \frac{32 \mu V}{D^2} + \rho g \sin \theta$$

$$\Delta P = l \left[\frac{32 \mu V}{D^2} + \rho g \sin \theta \right]$$

$$\Delta P = 0.35 \left[\frac{32 \times 4 \cdot 10^{-3}}{9 \cdot 10^{-3}} + 9810 \cdot \sin \theta \right]$$

$$\Delta P = 553,086 + 3433,50 \sin \theta$$

$$P_2 = P_1 - 553,086 - 3433,50 \sin \theta$$

$$P_1 = 120 \text{ mm Hg} = 120 \times 10^{-3} \times 13600 \times 9.81 = 16009,92 \text{ Pa}$$

$$P_2 = 16009,92 - 553,086 - 3433,50 \sin \theta$$

$$P_2 = 15456,83 - 3433,50 \sin \theta$$

$$115,85 = P_2 = 15456,83 \text{ Pa} \quad \theta = 0^\circ \quad \omega = 1 \text{ s}$$

mm Hg

$$P_2 = 12023,33 \text{ Pa} \quad \theta = 90^\circ \quad \omega = 1 \text{ s}$$

mm Hg

$$P_2 = 18890,33 \text{ Pa} \quad \theta = -90^\circ \quad \omega = 1 \text{ s}$$

mm Hg

