

Task 2

FIND REYNOLDS NUMBER.

$$L = 1\text{ m}$$

$$\rho = 850\text{ kg/m}^3$$

$$\mu = 25\text{ CP} = 0.025\text{ N}\cdot\text{s/m}^2$$

$$V = 50\text{ L/hr} = 13.888 \times 10^{-6}\text{ m}^3/\text{s}$$

$$D = 0.9 \times 10^{-3}$$

$$A = 0.64 \times 10^{-3}\text{ m}^2$$

$$\text{AVERAGE VELOCITY (cm)} = \frac{V}{A}$$

$$\text{AREA} = \frac{\pi D^2}{4} = \frac{\pi (0.9 \times 10^{-3})^2}{4} = 0.64 \times 10^{-3}\text{ m}^2$$

$$\text{AVERAGE VELOCITY (cm)} = \frac{13.888 \times 10^{-6}}{0.64 \times 10^{-3}}$$

$$= 0.0217\text{ m/s}$$

$$\text{REYNOLDS NUMBER} = \frac{\rho C_m D_H}{\mu}$$

$$= \frac{850 \times 0.0217 \times 0.9 \times 10^{-3}}{0.025}$$

$$= 0.664$$

FROM THE ABOVE I CAN SEE THE REYNOLDS NUMBER IS MUCH LESS THAN 2000 INDICATING LAMINAR FLOW.

PRESSURE DROP PER METER LENGTH

$$h_f = \frac{32 \mu L C_m}{\rho \times g \times D^2}$$

$$= \frac{32 \times 0.025 \times 1 \times 0.0217}{850 \times 9.81 \times (0.9 \times 10^{-3})^2}$$

$$= 2.57 \text{ pa}$$

$$\rho = 850 \text{ kg/m}^3$$

$$\mu = 0.025 \text{ N}\cdot\text{s/m}^2$$

$$L = 1 \text{ m}$$

$$C_m = 0.0217 \text{ m/s}$$

$$D = 0.9 \times 10^{-3}$$

$$g = 9.81 \text{ m/s}^2$$