

Q1. Losses in pipes.

mid thermal lab

11/11/2013

Given that :

$$T = 15^{\circ}\text{C}$$

$$\text{small diameter} = 13.6 \text{ mm}$$

$$M = 1.08 \times 10^{-3}$$

$$\text{Large diameter} = 26.2 \text{ mm}$$

$$\text{length} = 914.4 \text{ mm}$$

$$\text{Friction factor} = 0.026$$

m (kg)	t (s)	Expansion (mm)		Bend J (mm)		Globe valve (mm)	
7.5	32.8	h_1	h_2	h_3	h_4	h_5	h_6
		595	635	119	513	702	543

calculate :

A) The minor loss in Expansion, Bend J and Globe valve.

B) loss coefficient in Expansion, Bend J and Globe valve.

given :

$$h_m = \Delta h + \left(\frac{V_1^2 - V_2^2}{2g} \right) - h_f, \quad h_f = f \frac{L}{D} \frac{V^2}{2g}, \quad h_m = K \frac{V^2}{2g}$$

Q2 Hydrostatic Pressure Force on a plane Surface.

(True or False)

- 1- The objective is to determine the position of the centroid of the rectangular face of the toroid. ✓
- 2- A rider weight balances the weight of the toroid in the dry situation. ✓
- 3- The depth of water in the tank was determined by hook gauge. ✓
- 4- The location of the center of pressure will change if a different fluid were used in the tank. $T_{\text{net}} = F_{\text{Exp.}} + T$ ✓
- 5- The pressure forces act on the four surfaces of the rectangular toroid were ignored ~~because~~ because they were too small. ✓

Q3 Flow Through A Nozzle (True or False)

✓ velocity

- 1- The purpose of using the nozzle is to create a high-pressure fluid stream at the expense of its ^pvelocity. ✓
- 2- The chest pressure remains constant at given mass flow rate of fluid. ✓
- 3- The pressure ratio is equal to inlet pressure divided on throat pressure. ✓
- 4- The pressure at any point in the nozzle can obtain from small pressure gauge. ✓
- 5- The pressure at throat point is always higher than critical pressure. ✓