

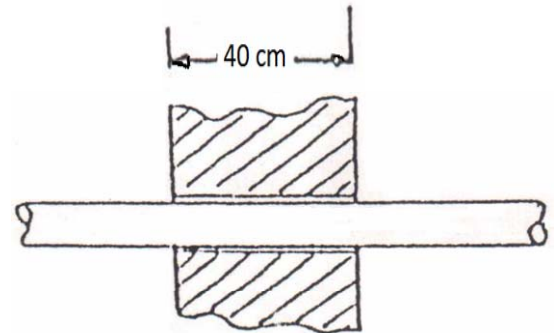
	Alexandria Higher Institute of Engineering & Technology (AIET)		
	Mechatronic Department		Third Year
	EME312	Fluid Mechanics	Midterm, April, 28, 2014
	Examiners:	Dr. Rola Afify and Committee	Time: 1.5 hours

Answer the following questions:

Question one (6 marks)

A) Define: Fluid, Specific gravity and Vapour pressure of liquids.

B) A shaft 6.00 cm in diameter is being pushed axially through a bearing sleeve 6.02 cm in diameter and 40 cm long. The clearance, assumed uniform, is filled with oil. Problems whose properties are $\nu = 0.003 \text{ m}^2/\text{s}$ and $\gamma = 0.88$. Estimate the force required to pull the shaft at a steady velocity of 0.4 m/s.

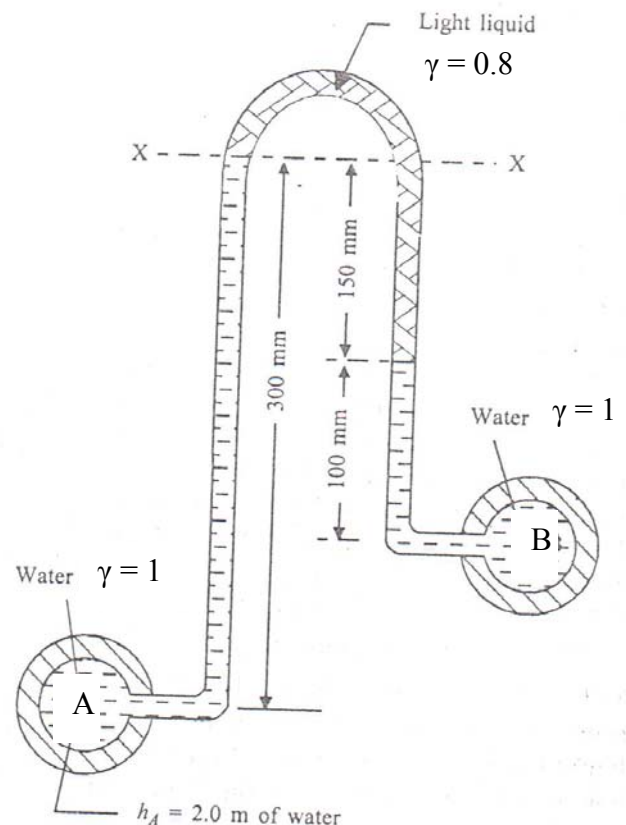


Question two (7 marks)

A) Compare between:

- 1- Piezometer and U-tube with one leg enlarged.
- 2- U-tube and Inverted U-tube.

B) The inverted differential manometer have an oil of specific gravity 0.8 connected to two different pipes carrying water under pressure. Determine the pressure in the pipe B. The pressure in pipe A is 2.0 meters of water.



Question three (7 marks)

A) Compare between:

- 1- Ideal and Real flows.
- 2- Steady and Unsteady flows.

B) The diameter of a pipe changes from 20cm at a section 5m above datum, to 5cm at a section 3m above datum. The pressure of water at first section is 5bar. If the velocity of flow at the first section is 1m/s, determine the pressure at the second section. Assume ideal flow.