College of Engineering & Technology

Department: Mechanical Engineering Marks: 20
Lecturer: Dr. Rola Afify   Time: 10:30 – 12:10
Course Code: ME362   Date: 22/4/2015
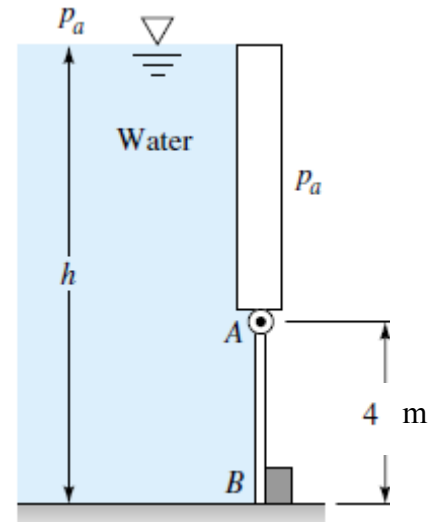

Name: R. N.:

Answer the following questions:
Question one (10 marks)
A) Gate AB is 5 m wide into the paper, hinged at A, and restrained by a stop at B. The water is at 20°C. Compute (a) the force on stop B and (b) the reactions at A if the water depth h = 9.5 m.

P_a ▽

Water

P_a

h

A

B

4 m

B) Gate AB is a quarter circle 8 m wide into the paper and hinged at B. Find the force F just sufficient to keep the gate from opening. The gate is uniform and weighs 3000N.

F

A ▽

r = 10 m   Water

B
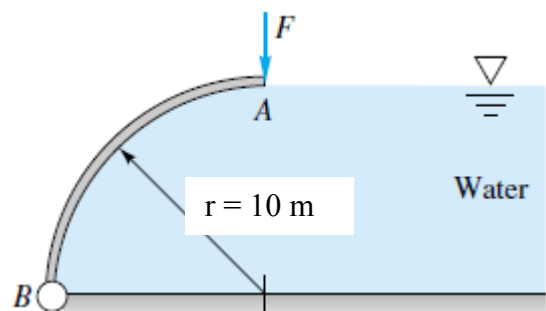
Question two (10 marks)

A) Compare between Steady flow and Unsteady flow.

B) A pipe 4 cm diameter is connected in series to a pipe 8-cm diameter. For a discharge of 6 lit/s, of a liquid of sp. gr. 0.9, the pressure before & after the sudden enlargement was 2 bar & 2.04 bar. Calculate the head lost in the enlargement.

C) A horizontal venturi meter is to be fitted to a 25-cm diameter horizontal pipe, in which the maximum flow is 7200 lit/min. of water and the pressure head at the inlet to the venture is 6-m water. What is the minimum diameter of the throat so that there is no negative pressure in it? Assume ideal flow.

Dr. Rola Afify