



College of Engineering & Technology

Department: Mechanical Engineering
 Lecturer: Dr. Rola Afify
 Course Code: ME362

Marks: 20
 Time: 2:30 – 4:10
 Date: 22/4/2015

Name: _____

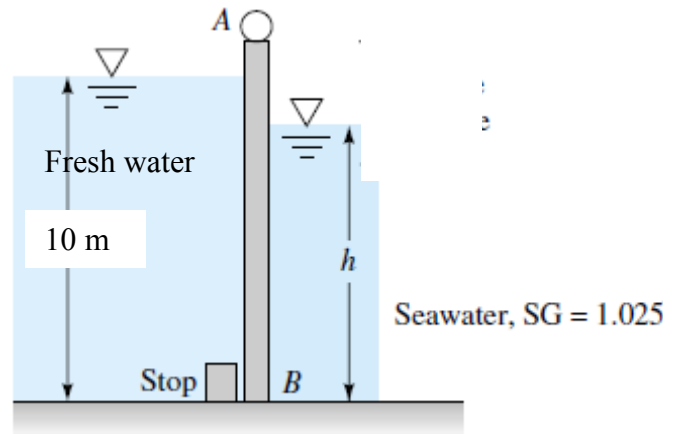
R. N.: _____

Answer the following questions:

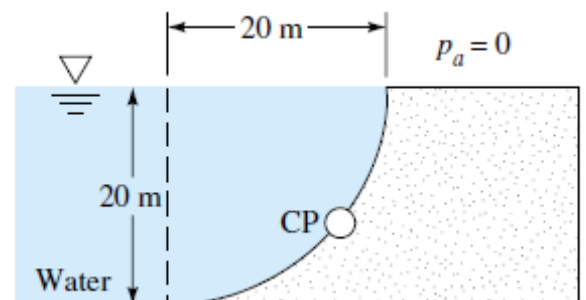
Question one (10 marks)

A) Gate AB is 5 m wide into the paper and opens to let fresh water out when the ocean tide is dropping. The hinge at A is 2 m above the freshwater level. At what ocean level h will the gate first open? Neglect the gate weight.

Hint: use $\sum M_A = 0$



B) The dam is a quarter circle 50 m wide into the paper. Determine the hydrostatic force against the dam and its angle with the horizontal.



Question two (10 marks)

A) Compare between Uniform flow and Non-uniform 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) 4 lit/s of a liquid of sp. gr. 0.95 flows through a 6-cm pipe. A venturi meter with 3-cm throat diameter and $C_d = 0.94$ is used to measure the discharge through the pipe. What would be the reading of a mercury U-tube connected to the meter if the venturi is Horizontal.