

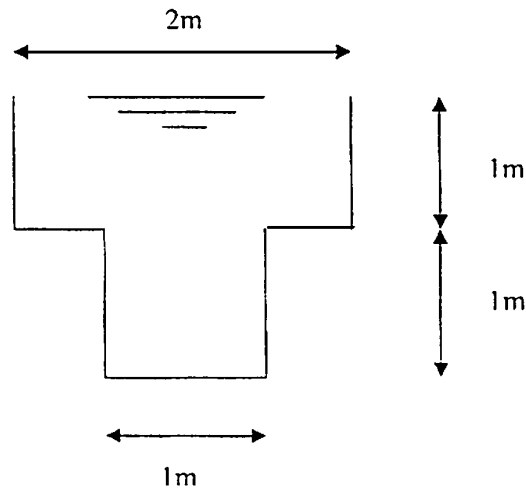
SECTION A

Question 1 (6 marks)

Water flows by gravity between two reservoirs through two parallel pipes, one of diameter 500mm and the other of diameter 1000mm. Assuming the friction factor is the same for the two pipes, what is the ratio of flow rates between the pipes?

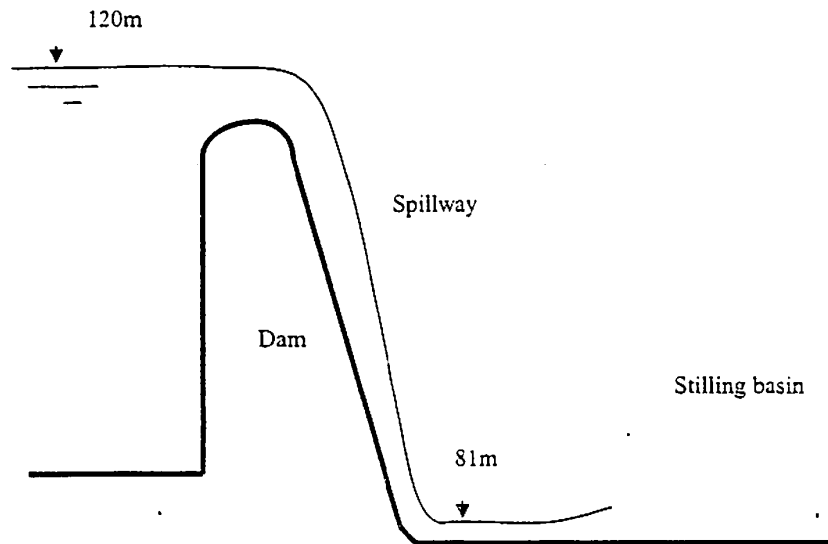
Question 2 (6 marks)

Calculate the Froude Number for this channel for a flow of $5\text{m}^3\text{s}^{-1}$



Question 3 (6 marks)

Assuming frictionless flow, what is the velocity at the bottom of the spillway?



Question 4 (6 marks)

A hydraulic jump occurs in a rectangular channel. Given that the upstream depth is 0.3m and that the upstream velocity is 12 m.s^{-1} , find the downstream depth.

Question 5 (6 marks)

What is the difference between an “impulse turbine” and a “reaction turbine”? Give an example of each type.