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Universiti Malaysia PAHANG

HYDRAULICS

NON-UNIFORM FLOW IN OPEN CHANNEL

EXERCISE

TOPIC 3.4

by

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Exercise 3.6

Water flows at a rate 20 m^3/s through a rectangular channel 4 m wide from a 'steep channel' to a 'mild channel', creating a hydraulic jump. The upstream depth of flow is 1.2 m. Determine;

a) The downstream depth of flow
b) The energy (head) loss in the jump
c) The upstream and downstream velocities
d) Power dissipated

Exercise 3.7

Water discharging into a 10m wide rectangular horizontal channel from a sluice gate is observed to have undergone a hydraulic jump. The flow depth and velocity before the jump are 0.8m and 7m/s, respectively. Determine;

a) the flow depth and the Froude number after the jump
b) the head loss and the dissipation ratio
c) the wasted power production potential due to the hydraulic jump