

Note: All questions are compulsory. Marks are indicated against each question in square brackets

Q1. Find the dimensions (width ' b ' and depth ' y ') of the most economical channel section as given in Fig. 1. The c/s area of the section is 40 m^2 , bed slope is 1 in 2000 and Chezy's constant = 50.

Also determine the discharge from the most economical section.

(CO1:CO2) [3+2=5 marks]

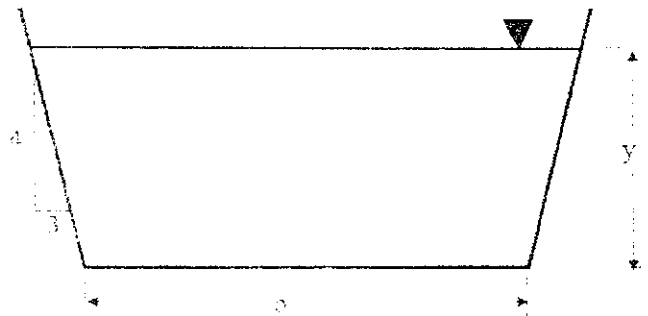


Fig. 1

Q2. A flow of 100 litres per second flows down in rectangular laboratory flume of width 0.6 m and having adjustable bottom slope. If Chezy's C is 56, determine the bottom slope necessary for uniform flow with a depth of flow 0.3 m. Also find the Froude's Number and comment on the state of flow.

(CO1: CO2) [3+1+1=5 marks]

Q3. The most economical section for a circular channel depends on the conditions of maximum velocity and maximum discharge. In view of this condition, prove that for maximum velocity, the central angle ' 2θ ' subtended by the water surface should be equal to $257^\circ 30'$ (approximately). Also prove that the depth of flow should be approx. 81% of the diameter of the circular section for having the maximum velocity of flow.

(CO1: CO2) [5 marks]