

Submission Date: 13/02/14

Assignment - 01

Q.1 The velocity distribution in a wide Rectangular Channel may be approximated by the equation

$$u = 0.4 + 0.6y \text{ m/sec.}$$

find average velocity and α, β if $h = 1.0\text{m}$.

Q.2 Show that for a triangular channel, the Froude's Numbers Corresponding to alternate depths are given by

$$\frac{F_2}{F_1} = \left[\frac{4 + F_2^2}{4 + F_1^2} \right]^{5/2}$$

Q.3 if h_1 and h_2 are alternate depths in a triangular Channel Show that-

$$h_c^5 = \frac{4h_1^4 h_2^4}{(h_1^2 + h_2^2)(h_1 + h_2)}$$

where $h_c =$ Critical depth

and further show that

$$\frac{E}{h_1} = \frac{\eta^4 + \eta^3 + \eta^2 + \eta + 1}{(1 + \eta^2)(1 + \eta)} \quad \text{where } \eta = \frac{h_2}{h_1}$$

Q.4 Show that at the Critical depth the specific energy in a rectangular channel is equal to 1.5 times the depth of flow. Will the depth of flow be greater or less than $2/3 \times$ specific energy for the trapezoidal channel and why?