KATIHAR ENGINEERING COLLEGE, KATIHAR

DEPARTMENT OF CIVIL ENGINEERING

Subject: Hydraulics & OCF   **Maximum Marks:** 05

Time: 40 Minutes   **Instructor:** Rashid Mustafa

Test- 02

Q.1 At a hydraulic jump, the depths at the two sides are 0.4 m and 1.4 m. The energy loss in the jump in a rectangular channel **in m** is --

Q.2 A triangular open channel has a vertex angle of 90° and carries flow at a critical depth of 0.30 m .The discharge in the channel is ----------------------------- m^3/sec.

Q.3 The conjugate depths at a location in a horizontal rectangular channel, 4m wide are 0.2 m and 1.0 m. The discharge in the channel is ----------------------m^3/sec

Q.4 The sequent depth ratio of a hydraulic jump in a rectangular channel is 10.30. The Froude Number at the beginning of the jump is

   (a) 5.64   (b) 7.63   (c) 8.05   (d) 13.61

Q.5 A very wide rectangular channel carries a discharge of 8 m^3/sec per m width. The channel has a bed slope of 0.04 and Manning's roughness coefficient 0.015. At a certain section of the channel, the flow depth is 1.0 m. What Gradually varied flow profile exists at this section?

   (a) M_2 (b) M_3 (c) S_2 (d) S_3

Q.6 In an open channel of wide rectangular section with constant n value, the bed slope is 1.2 x $10^{-3,}$ the local friction slope at a section is 1.05 x 10^{-3} and the local Froude Number of the flow is 0.8. The local rate of variation of depth with longitudinal distance along the flow direction is

   (a) $\frac{1.2-1.05}{1-0.8}$ x 10^{-3} (b) $\frac{-1.2-1.05}{1-0.8}$ x 10^{-3} (c) $\frac{1.2+1.05}{1-0.64}$ x 10^{-3} (d) $\frac{1.2-1.05}{1-0.64}$ x 10^{-3}

Q.7 A rigid boundary rectangular channel having a bed slope of 1/800 has its width and depth of flow equal to 2 m and 1 m respectively. If the flow is uniform and the value of Chezy's constant is 60, the discharge through the channel is -------------------------- m^3/sec.

Q.8 A mild sloped channel is followed by a steep channel. The profiles of gradually varied flow in the channel are

   (a) M_3, S_2 (b) M_3, S_3 (c) M_2, S_1 (d) M_2, S_2

Q.9 A rectangular channel 3 m wide is laid on a slope of 0.0002. When the depth of flow in the channel is 1.5 m, what is the average boundary shear stress in N/m^2 is

    (a) 0.3   (b) 0.15   (c) 3.0   (d) 1.5

Q.10 Critical depth at a section of a rectangular channel is 1.5 m. The specific energy at that section is in -------------------- m

Q.11 The ratio of the coefficient of friction drag in laminar boundary layer compared to that in turbulent boundary layer is proportional to

    (a) $R_L^{0.5}$ (b) $R_L^{0.2}$ (c) $R_L^{0.3}$ (d) $R_L^{-0.3}$

Q.12 An automobile with projected area 2.6 m^2 is running on a road with a speed of 120 km per hour. The mass density and the kinematic viscosity of air are 1.2 kg/m^3 and 1.5×10^{-5} m^2/s, respectively. The drag coefficient is 0.30. The drag force on the automobile is

    (a) 620 N   (b) 600 N   (c) 580 N   (d) 520 N

Q.13 A discharge of 1 m^3/s is flowing in a rectangular channel one meter wide at a depth of 20 cm. The bed slope of the channel is

    (a) Mild   (b) Critical   (c) Steep   (d) Adverse

Q.14 A trapezoidal channel with bottom width of 3 m and side slope of 1V:1.5H carries a discharge of 8 m^3/sec with the flow depth of 1.5 m. The Froude Number of the flow is ------------ -----------------

Q.15 The following type of GVF profile do not exist

    (a) C_2 , H_2 ,A_1 (b) A_2 , H_1 ,C_2 (c) H_1 , A_1 , C_2 (d) None

< END OF THE QUESTION PAPER>

NOTE: Solution of class test 02 will be uploaded on the college website **www.keck.ac.in**