DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Course: B. Tech in Civil Engineering

Mid Semester Examination – March 2019

Subject Name: Hydraulics II

Max Marks:20

Date:-11/03/2019

Sem: IV

Subject Code: CV 404

Duration:- 1 Hr.

Instructions to the Students:

1. All questions are compulsory.
2. Assume suitable data if necessary.

		(Level/ CO)	Marks

Q. 1   Attempt following Questions — 6

a   Flo in the open channel may be classified as 'Laminar' flow if;......   CO 1/ C-1
   (a) Re < 500   (b) Re >2000   (c) 500 < Re < 2000 (d) none of the above

b   The phenomenon occurring in an open channel when a rapidly flowing stream abruptly Changes to slowly flowing stream causing a distinct rise of liquid surface, is   CO 2/ C-1

   (A) Water hammer (B). Hydraulic jump (C). Critical discharge (D). None of the above

c   The channel whose boundary is not deformable is known as   CO 1/ C-1

   (A). Rigid channel (B). Prismatic channel (C). Mobile channel (D). Boundary channel

d   For a given discharge in a channel at critical depth   CO 2/ C-2

   (A). The total energy is minimum (B). The total energy is maximum
   (C). The specific energy is minimum (D). The specific energy is minimum

e   The most economical section of a trapezoidal channel is one which has hydraulic mean depth equal to;   CO 1/ C-2

   (A). 0.5[depth] (B). 0.5 [sloping side] (C). 0.5[width] (D). 0.5[width + depth]

f   The Maximum velocity in open channel occurs at;   CO 1/ C-1

   (A). Near the channel bed (B). a little below channel free surface
   (C). at the free surface   (D) at the centre of flow

Q.2   Solve Any Two of the following.   3 X 2

(A)   A 3 m wide rectangular channel conveys 12 m³/s of water at a depth of 2m. Calculate;   CO 2/ C-3

   i)   Specific energy, critical depth, minimal specific energy, critical velocity
   ii)   Froude number and whether floe is subcritical or supercritical.

(B)   What are the different types of channels? Give example in each case.   CO 1/ C-2

(C)   A triangular gutter whose side includes angle of 60° conveys water at a uniform depth 4m. If the slope of the bed is 1 in 1000 find the rate of flow of water. Take Chezy's constant C =55.   CO 1/ C-3

Q.3   Solve Any One of the following.   8

(A)   Derive expression for the most economical trapezoidal channel section.   CO 3/ C-3

(B)   Derive an expression for sequent depths is hydraulic jump. If sequent depths in a rectangular channel before and after hydraulic jump are 0.5m and 2 m respectively, calculate critical depth and discharge per unit width of channel.   CO 3/ C-3

—*** End ***