Last Date of Submission [illegible] **Section: CE-B3**

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B. Tech Final Year (Seventh Semester) 2018-19

Department of Civil Engineering

OPEN CHANNEL FLOW (NCE-042)

Assignment: I (Unit: I)

NOTE: ATTEMPT ALL PARTS

1. Differentiate b/w the following:
   - i- Uniform and non-uniform flow
   - ii- Steady and unsteady flow
   - iii- GVF&RVF
   - iv- Rigid and Mobile boundary channel
   - v- Prismatic and non-prismatic channel.

2. What is velocity distribution in an open channel flow? Explain with figure.
3. What is Continuity equation in an open channel flow?
4. What is Chezy's formula? How it is derived? Show that Chezy's coefficient C = where R is the hydraulic radius and n is Manning's roughness coefficient.
5. State the conditions under which the rectangular, triangular and trapezoidal sections of an open channel will be most economical. Derive these conditions.
6. What do you mean by term specific energy? Draw specific energy curve and explain it also derive Supercritical, Subcritical and critical flow condition.
7. A rectangular channel is 3m wide and conveys a discharge of 15m³/s at a depth of 1.9m.It is proposed to reduce the width of the channel at a hydraulic structure.Assuming the transition to be horizontal and the flow to be frictionless determine the water surface elevations upstream and downstream of the constriction when the constricted width is (a)2.5m (b)2m.
8. Determine the normal depth in triangular channel with apex angle 90 degree ,when it carries a discharge of 1.5m³/s at mannning's n=0.016.
9. Water is flowing at a critical depth at a section in a triangular shaped channel ,with side slope of 0.5H:1V with its apex positioning upward .If the critical depth is 1.4m and base width is 3m estimate the discharge in the channel and specific energy at the critical depth section.
10. While measuring a discharge in small stream it was found that the depth of flow increases at the rate of 0.15m/h .If the discharge at that section was 25m³/s and the surface width of stream was 20m ,estimate the discharge at section 1km upstream.

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****Note: Assignment will not be evaluated after last date of submission.**