**AKGEC/IAP/FM/02**

**AJAY KUMAR GARG ENGINEERING COLLEGE, GHAZIABAD**

**DEPARTMENT OF CIVIL ENGINEERING**

**Sessional Test–2**

Course: B.Tech. Semester: VII

Session: 2017-18 Section: CE-1& 2 Subject: Open Channel Flow Sub. Code: NCE-043

Max Marks: 50 Time: 2 hours

*Note:* Answer all the sections. Any data if missing may be assumed suitably.

**SECTION– A**

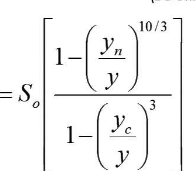
1. Attempt **all** the parts.  **(5 x2 = 10)**

1. What are the limitations of GVF?
2. Describe flow classification and its surface profile in GVF?
3. Write the basic differential equation in terms of conveyance and section factors.
4. Explain significance of Critical Depth Flume.
5. Explain celerity of wave.

**SECTION B**

2. Attempt **all** the parts.  **(5 x5 =25)**

1. Derive expression for **positive surge moving downstream** and **positive surge moving upstream.**
2. Water flows over a rectangular sharp crested weir 1.2 m long, the head over the sill of the weir being 0.65 m. the approach channel is 1.4 m wide and depth of the flow in the channel is 1.2 m. determine the rate of discharge over weir. Consider also velocity of approach and effect of end contraction. Take coefficient of discharge for the weir as 0.6
3. An overflow spillway is 40 m high. At the design energy head of 2.5 m over the spillway find the sequent depths. Neglect energy loss due to flow over the spillway face. (Assume Cd =0.68)
4. A rectangular channel with a bottom width of 4.0 m and a bottom slope of 0.0008 has a discharge of 1.50 m3/s. in gradually varied flow in this channel, the depth at certain location is found to be 0.30 m. assuming N=0.016, Determine the type of GVF profile.
5. Show that for wide rectangular channel, if the Manning’s formula is used, the differential equation of GVF is given by:



**SECTION C**

3. Attempt **all** the parts.  **(2 x 7.5 =15)**

* 1. A wide rectangular channel conveys a discharge of 4 m3/s/m with bed slope of 0.0001, n=0.02. If the depth of section is 4m determine how far upstream or downstream of the section the depth would be within 10% of normal depth. Take 2 steps.
  2. Write short notes on:
     1. Sharp crested rectangular weir
     2. Suppressed rectangular weir
     3. Francis weir
     4. Standing wave flume
     5. Parshell flume