Enrollment No.					

LDRP Institute Of Technology & Research, Gandhinagar.

B.E. VIth Semester

MID SEMESTER EXAMINATION Date/Day: 28/02/15 Saturday Branch: CIVIL Subject Name: Applied Fluid Mechanics (CV601) * Max. Marks 30 Time 10.00 am to 11:30 am Instructions: 1) All questions are compulsory 2) Figures to the right indicate full marks. 3) Indicate clearly, the options you attempt along with its respective question number. Q.1 Derive Navier - Stoke equation for viscous flow. [5] (a) (b) A fluid of viscosity 0.98 poise and relative density 0.9 is flowing through a circular pipe of [5] diameter 100 mm and 0f length 12 m. Calculate the difference of pressure at the two ends of the pipe, if 120 kg of fluid is collected in a tank in 30 seconds. An earthen channel with a base 3 m wide and side slope 1:1 carries water with a depth of 1 Q.2(a) m. The bed slope is 1:1600. Estimate the discharge. Take value of N in Manning's formula N = 0.04. Define specific Energy. Explain Specific Energy Curve. [5] (b) **OR** The discharge of water through a rectangular channel with 6m width and 2 m depth of flow (a) is 18 cumecs. Calculate(1) specific energy of flowing water (2) critical depth (3) critical velocity (4) minimum specific energy. (b) Derive the geometrical conditions for the most economical section of a trapezoidal channel. [5] Explain Prandtl's mixing length theory. [5] Q.3(a) Water is flowing through a rough pipe of diameter 600 mm at the rate of 550 litres/second. [5] (b) The wall roughness is 3 mm. Find the power lost for 1.2 KM length of pipe. OR An oil of viscosity 1 poise is flowing through a pipe of 60 mm diameter. If the pressure drop (a) [5] per meter of pipe is 25 KN/m². Find discharge through the pipe. Take specific gravity of oil as 0.80.

***********All THE BEST********

(b)

Define: Laminar sub layer thickness, Shear velocity, Hydrodynamically rough boundary.

[5]