

6. (a) Explain various types of boundary layers and boundary layers zones. **10**
- (b) With neat sketches, explain stability for floating and submerged bodies. **10**
7. (a) Explain the following :
 (i) Karman Vortex Trail
 (ii) Separation of boundary layer. **10**
- (b) List the various types of Minor Losses. Explain them in detail. **10**
8. (a) What do you mean by geometric, kinematic and dynamic similarities ? Are these similarities truly attainable ? **10**
- (b) What do you understand by total drag on body and co-efficient of drag and lift ? Explain in detail. **10**

No. of Printed Pages : 04

Roll No.

W-371

B. Tech. EXAMINATION, Dec. 2018

(Third Semester)

(Weekend) (Re-appear Only)

(CE)

CEW201

FLUID MECHANICS

Time : 3 Hours]

[Maximum Marks : 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. Assume any data if missing.

1. (a) Explain the phenomenon of Capillary Fall and Capillary Rise. Derive the expression for them. **10**
 (b) Explain the following terms : **10**
 (i) Compressibility
 (ii) Surface tension.
2. (a) Derive an expression for total pressure and centre of pressure for vertical plane surface submerged in liquid. **10**
 (b) Find the surface tension in a soap bubble of 40 mm diameter when the inside pressure is 2.5 N/m^2 above atmosphere. **10**
3. (a) A body has the cylindrical upper portion of 3 m diameter and 1.8 m deep. The lower portion is a curved one, which displace a volume of 0.6 m^3 of water. The center of buoyancy of the curved portion is at a distance of 1.95 m below the top of the cylinder. The centre of gravity of the whole body is 1.20 m below the top of the cylinder. The total displacement of water is 3.9 tons. Find the meta-centric height of the body. **10**

- (b) (i) Difference between laminar and turbulent flow.
 (ii) Difference between pipes in series and pipe in parallel. **10**
4. (a) The right limb of a simple U-tube manometer containing mercury is open to the atmosphere while the left limb is connected to a pipe in which a fluid of Sp. Gr. 0.9 is flowing. The centre of the pipe is 12 cm below the level of mercury in the right limb. Find the pressure of fluid in the pipe if the mercury level in the two limb is 20 cm. **10**
 (b) Explain U-tube differential manometers, Inverted U-tube U-tube differential Manometers with difference between them. **10**
5. Write short notes on the following : **20**
 (a) Separation of boundary layer
 (b) Hydraulic gradient line
 (c) Loss at sudden expansion
 (d) Meta centric height.