

FLUID MECHANICS AND HYDRAULICS

Question Bank

Properties of Fluid

1. What do you mean by fluid? Why fluid mechanics is considered as important subject in civil engineering?
2. Explain in detail: Types of fluid.
3. Differentiate between solids, liquids and gases.
4. Explain in detail: Different branches of fluid mechanics.
5. Briefly explain applications of fluid mechanics.
6. Explain in detail: Properties of fluid.
7. Explain in detail: Theory of Surface Tension.
8. Explain in detail: Capillarity
9. Describe in detail: Newton's law of viscosity. Also derive relation between shear stress and viscosity.

Open Channel Flow

1. Describe in detail: Classification of open channel flow.
2. What is hydraulic mean depth? Derive expression of hydraulic mean depth for rectangular section, triangular section.
3. Derive an equation for most economical section for rectangular section, trapezoidal section.
4. Describe in detail: average shear stress for uniform flow.
5. Describe in detail: Specific energy diagram.
6. Describe in detail: 1. Critical depth, 2. Critical velocity, 3. Alternate depth.
7. Differentiate between pipe flow and open channel flow.

Dimensional Analysis and Similitude

1. What is dimensional homogeneity? Explain with example.
2. Explain in detail: Rayleigh's method.
3. Explain in detail: Buckingham's π -method.
4. Describe in detail: Geometric similarity, kinematic similarity and dynamic similarity.

