BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY
Question Bank (I-Scheme)

Name of subject: Hydraulics **Unit Test: I**
Subject code: 22401 **Course: CE**
Semester: IV

Unit 1 (Pressure Measurement)

2 Marks

1. Define Fluid Mechanics, Hydraulics.
2. State Newton's law of Viscosity.
3. What do you mean by gauge pressure and absolute pressure?
4. State the advantages of U-tube manometer over the piezometer tube.
5. Difference between Real and ideal fluid.
6. Define Capillarity.

4 Marks

1. Explain with a neat sketch and the working of Bourdons pressure gauge.
2. Derive relation for pressure head difference for U-tube manometer and inverted U-tube manometer.
3. If the specific gravity of oil is 0.85, what is its specific weight in N/m^3?
4. The volume of liquid is 2.5 m^3 .it is reduced by 0.025 m^3 by increasing the pressure from 10atm to 220atm.Estimate the bulk modulus of elasticity of the liquid.
5. If the specific gravity of liquid is 0.80, calculate its density, specific volume and specific weight.

Unit II (Hydrostatics)

2 Marks

1. Define total hydrostatic pressure and Centre of pressure. Draw diagram to describe it.
2. State Pascal's law and give its application.

4 Marks

1. Explain the concept of pressure diagram with neat sketches and explain the use of pressure diagram.
2. A vertical tank square in plan has side width 3.5m. It contains an oil of specific gravity 0.9 to a depth of 2.4m. Calculate total pressure on bottom and on one side of tank.
3. A cylindrical water tank 10m in diameter and 15m high is filled with water.
   Find. (a) Intensity of water on bottom of tank
   (b) Total force on bottom
   (c) Total force on side

Unit III (Fluid Flow Parameters)

2 Marks

1. Explain Continuity Equation for liquid flow.
2. Define Pressure head and give its unit.
3. Explain Energy of flowing liquid.

4 Marks

1. A pipeline carry oil of specific gravity 0.87, changes in diameter from 200mm diameter at a position A to 500mm, diameter at a position B which is 4m at a higher level. If the pressure at A and B are 9.81 N/cm^2 and 5.886 N/cm^2 resp. and the discharge is 200lit/sec, determine the loss of head and direction of flow.
2. While performing the experiment of Reynolds number , a batch of students observed actual discharge of 4.4×10^{-6} m^3/s from a pipe of 2.5 cm dia. The dynamic viscosity (μ) at room temperature 25° C was 0.824×10^{-3} $N\text{-}sec/m^2$. Identify the flow observed and draw the sketch of it.
3. Find the head loss and direction of flow for the pipe as shown in fig.
4. Determine the total pressure acting on one side and bottom of tank containing water upto depth 2.0m and length 3.0m, width 3.0m.
5. Define : (a) Steady and Unsteady flow
   (b) Uniform and Non-Uniform flow
   (c) Laminar and Turbulent flow
   (d) Reynolds No. and their use
6. State the Bernoulli's theorem and write the mathematical expression for it.
7. Explain Continuity Equation for liquid flow.

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