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

Name of subject: Hydraulics　　　　　　　　　　　**Unit Test: I**
Subject code: 314303　　　　　　　　　　　　　　　**Course: CE**
　　　　　　　　　　　　　　　　　　　　　　　　　　Semester: IV

Unit 1 (Pressure Measurement)

2 Marks
1. Define i) Mass Density   ii) Weight Density   iii) Specific Gravity
2. Define surface tension
3. Explain Pascal's law of Fluid pressure.
4. Define Hydrostatics and Hydrodynamics.
5. Define Capillarity of Water.

4 Marks

1. Explain with a neat sketch the working of Bourdons pressure gauge.

2. Explain simple U-Tube manometer.

3. A simple U-tube manometer shows mercury level 100mm above Centre of Pipe in the open limb and 50 mm below Centre of pipe in the left limb connected to pipe. The pipe is horizontal and carries oil of specific gravity 0.8 calculate pressure in Pipe.

4. Right limb of mercury U-tube manometer is connected to a pipe which carries water under pressure. Left limb of tube is open to atmosphere ,deflection of mercury is 300 mm ,if Centre of Pipe is 750 mm above free surface of mercury in left limb calculate pressure in Pipe.

5. A differential manometer connected to pipe at A and B in a pipeline containing an oil of specific gravity 0.8. A manometer reading is 70 cm of calcium carbide of specific gravity 1.1. Find the pressure difference if points A and B are at the same level and oil flows from A to B.

Unit 2 (Hydrostatics)

2 Marks
1. Define total hydrostatic pressure and Centre of pressure. Draw diagram to describe it.
2. A vertical tank square in plan has side width 3.5 m it contains an oil of specific gravity 0.9 to a depth of 2.4 m ,calculate total pressure on side of Tank.
3. State the uses of Pressure Diagram.
4. Define Pressure and its S.I. Unit.
5. Concept of Pressure diagram.

4 Marks
1. 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

2. A circular plate of 4m diameter is immersed in water such that its greatest and least depth below the free surface of water are 5m and 3m respectively.Calculte the total pressure and centre of pressure.

3. A partition wall 2m long divides a storage tank. On one side there is turpentine of sp.gr.0.87 upto a depth of 3m.On the other side there is a oil of sp.gr. 0.8 stored to a depth of 2.4m.Determine the resultant pressure on the partition wall.

4. A square plate of sides 1.5m is held in water such that two sides are horizontal and the plate makes an angle of 60 degree with the horizontal.If upper horizontal side is at water surface.Calculate total pressure and centre of pressure.

5. A circular plate 3m in diameter immersed in water vertically 2 m below free liquid surface.Find centre of pressure and total pressure.

Unit 3 (Hydrokinematics and Hydrodynamics)

2 Marks

1. Explain Continuity Equation for liquid flow.
2. Define Uniform flow and Non Uniform flow.
3. Define Reynold's Number and its use.
4. Define Steady flow and Unsteady flow.

4 Marks

1. Explain Bernoulli's Theorem.
2. Differentiate between Laminar flow and Turbulent flow.
3. Water is flowing upward through a vertical pipe line 15m height is gradually tapers from 300mm diameter at bottom to 200mm at top and 300KPa pressure ,2m/s velocity at bottom. Calculate the pressure at top of pipeline.if loss of head is 5.5m of water.

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