19MEB201 - Fluid Mechanics and Machinery

Question Bank

Part-A

1) What is fluid mechanics?
2) State : Newton's Law of viscosity
3) Define Density and Specific gravity of fluids
4) What are the various types of fluids?
5) Define Laminar and Turbulent flows
6) How Pascal's law is applied for water & Mercury
7) Distinguish between weight density and Specific weight of fluids
8) Differentiate gauge pressure and absolute pressure
9) Distinguish EGL and HGL
10) Draw the Velocity and shear stress distribution for the flow through circular pipes
11) Define specific volume and relative density
12) Apply the surface tension of fluids in various possibilities
13) Discuss on Capillary rise & Capillary fall with Examples
14) State Darcy's Weisbach equation
15) What is vapour pressure and Cavitation
16) Define kinematic viscosity of fluids
17) What is shear stress?

Part-B

1) Calculate the specific weight, density and Specific gravity of two litres of liquid which weighs 20N

2) Explain Laminar flow & Turbulent flow with Examples.

3) A plate 0.02mm distant from a fixed plate moves 60m/sec and requires a force of 2N per unit area to maintain this speed. Find the fluid Viscosity (μ) between the plates

4) Derive Continuity equation from basic principles

5) Discuss of the types of U-tube Manometers

6) Explain in detail about the Boundary layer concepts and Boundary layer thickness

7) Give the derivation for the surface tension on liquid surface, liquid Jet and Water droplet

8) Derive Bernoulli's equation from Euler's equation of Motion

9) Give a case study on HGL and EGL considering flow through conduits

10) A 30 cm diameter pipe, conveying water, branches into two pipes of diameters 20 cm and 15 cm respectively. If the average velocity in the 30 cm diameter pipe is 3 m/sec, find the discharge in this pipe. Also, determine the velocity in 15 cm pipe, if the average velocity in 20 cm diameter pipe is 2m/sec

11) Derive the Expression for Darcy's Weisbach equation. Also, Discuss the frictional losses

12) Water is flowing through a pipe of 100mm diameter under a pressure of 19N/cm^2 and with a velocity of 3 m/sec. Find the total head of water which is 8m above the datum line

13) The capillary rise in a glass tube is not to Exceed 10mm of water. Determine its minimum size, given the surface tension for water in contact with air is 0.07 N/m. (Take $\theta = 0^\circ$)

14) A tube is made of two capillaries of diameter 1 mm & 1.5mm. The tube is kept vertically and partially filled with water with surface tension of 0.07 N/M Calculate the difference in the levels of water caused by capillarity (Take $\theta = 0^\circ$)

*****ALL THE BEST *****