Date:

ASSIGNMENT-2

MODULE -3

Fluid Mechanics:

1. Define:
   a. Density
   b. Dynamic viscosity
   c. Kinematic viscosity
   d. Capillary
   e. Bulk modulus of elasticity
   f. Surface tension
   g. Vapor pressure
   h. Cavitation
   i. Cohesion
   j. Adhesion
2. State and explain Newton's law of viscosity.
3. Obtain an expression for capillary rise of liquid?
4. What is compressibility? Derive an expression for it?
5. Define atmospheric pressure, gauge pressure, gauge pressure, vacuum pressure and absolute pressure.
6. Enlist types of manometers. Differentiate between u-tube manometer and u-tube differential manometer.
7. Explain single column manometer with usual notation. State advantages and limitations of manometer.
8. Describe vertical single column manometer? How will you measure the fluid pressure with it?
9. Explain the working principle of U-tube differential manometer with neat sketch.
10. Explain Bourdon tube pressure gauge in brief.
11. Explain concepts of : Centre of pressure
12. Derive an expression for total pressure and C.P. in case of a vertical plate immersed in a liquid.
13. Explain briefly :
    a. Steady flow and unsteady flow

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b. Uniform flow and non uniform flow
c. Laminar and turbulent flow
d. Compressible and incompressible flow
e. Rotational and irrotational flow

14. Derive Euler's equation of motion along a streamline and hence obtain Bernoulli's equation clearly state the assumption made
15. State assumptions for Bernoulli's equations. Derive Bernoulli's equations
16. Differentiate between:
a. Compressible flow and Incompressible flow
b. Uniform flow and Non-uniform flow

Flow measuring instruments:

1. Explain the construction and working of a Venturimeter and also derive an expression for the discharge through it.
2. What is Vana - contracta related to Orifice meter?
3. Compare venturimeter and orificemeter?
4. What is pitot tube? Expain with sketch.
5. Differentiate between notch and weir.
6. Derive and expression for discharge in following cases:
a. Over a rectangular weir
b. Over a V- notch
c. Over a trapezoidal