

Printed Pages : 3



ECE-509

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 132501

Roll No.

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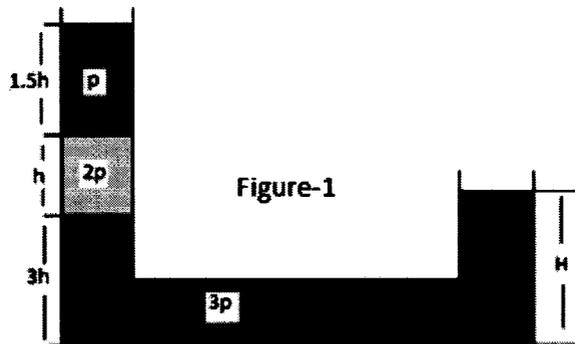
B. Tech.

(SEM. V) (ODD SEM.) THEORY
EXAMINATION, 2014-15
FLUID MECHANICS

Time : 2 Hours]

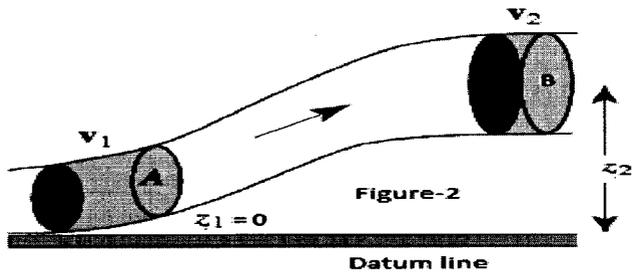
[Total Marks : 50

1. Attempt ANY Four Questions **3.5×4=14**
- (a) Explain the following.
- (i) Viscosity
 - (ii) Rotational flow
 - (ii) Nozzles
- (b) Define the following terms.
- (i) Steady and unsteady flow
 - (ii) Two dimensional flow
 - (iii) Uniform and non-uniform flow
 - (iv) Laminar and Turbulent flow
- (c) A circular disc 3m in diameter is held normal to a 26.4m/s wind of density 0.0012gm/cc. what force is required to hold it at rest? Assume co-efficient of drag of disc= 1.1
- (d) Three immiscible liquid of density p , $2p$ and $3p$ are kept in a jar the height of liquid in jar and piezometer are fitted to the bottom of jar is given in Figure-1 find H/h .



- (e) Explain HOT wire anemometer.
- (f) Differentiate between Lagrangian and Eulerian approaches.
2. Attempt Any TWO Questions. **6x2=12**
- (a) Explain Buckingham's Theorem in details with example.
- (b) Drive an expression for flow through pipes in parallel with neat sketch.
- (c) Water is flowing through a horizontal pipe of diameter 200mm at a velocity of 3m/s. A circular solid plate of dia. 150mm is placed in the pipe to obstruct the flow. Find the loss of head due to obstruction in the pipe if $C_c = 0.62$.
3. Attempt Any TWO Questions. **6x2=12**
- (a) Drive an expression for Bernoulli's equation also give its applications.
- (b) Drive an expression for Pitot tube and also give its application.

- (c) At a point "A" in a pipe line carrying water the diameter is 1m, pressure is 98Kpa and the velocity is 1m/s. At point 'B' 2m higher than "A" the diameter is 0.5m and the pressure is 20Kpa. Find the direction of flow of fluid in Figure-2.



4. Attempt Any TWO Questions. 6x2=12
- (a) Drive an expression for flow of viscous fluid between two parallel plates.
- (b) Describe the following term stream line, streak line path line with neat sketches. Also drive an expression for Darcy-Weisbach formula.
- (c) Define Reynold number in detail. What is its importance in fluid flow?