KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food.Engg) 2013 Admission

III[rd] Semester Final Examination- January -2015

Cat. No: Cien.2105

Title: Fluid Mechanics(2+1) **Marks: 50.00**

Time: 2 hours

I Fill up the blanks/State true or False **(10 x 1=10)**

1. _____is defined as a phenomenon of rise or fall of liquid surface in a small tube relative to the adjacent general level of liquid when the tube is held vertically in the liquid
2. Compressibility is the reciprocal of _____
3. Coefficient of contraction is the ratio of the area of the _____to the area of the orifice itself
4. The hydraulic machine which convert the mechanical energy into hydraulic energy is called _____
5. If the Reynolds number is less than 2000 ,the flow is called_____
6. A device used for measuring the rate of flow of a liquid through a small channel is_____
7. The SI unit of kinematic viscosity is_____
8. Pitot tube is a device used for measuring the depth of flow at any point in a pipe or a channel
9. When the fluid is at rest ,the shear stress is unity
10. Laminar flow is that type of flow in which the fluid particles move along a well defined paths

II Write short notes on any FIVE questions **(5 x 2=10)**

1. State Francis's formula for a rectangular weir
2. State stokes law
3. State Pascal's law
4. Define incompressible fluid
5. Define nappe
6. Define dynamic viscosity
7. Define gauge pressure

III Write short notes on any FIVE questions **(5 x 4=20)**

1. Describe the working principle of manometer with a neat sketch
2. Find the discharge over a triangular notch of angle 60^0 when the head over the V-notch is 0.3 m. Assume C_d=0.6
3. A circular tank of diameter 4 m contains water upto a height of 5 m .The tank is provided with an orifice of diameter 0.5 m at the bottom .Find the time taken by water (i) to fall from 5 m to 2 m and (ii) for completely emptying the tank. Take C_d=0.6

4. Explain the principle of venturimeter with a neat sketch
5. How will you determine the meta centric height of a floating body experimentally .Expalin with neat sketch
6. Discuss about drag coefficient of typical shapes
7. Explain the different types of pumps

IV Write an essay on any ONE **(1 x 10=10)**

1. State Bernoulli's theorem for steady flow of an incompressible fluid. Derive an expression of Bernoullis equation from the first principle and state the assumptions made for such a derivation
2. Discuss in detail about the boundary layer theory for turbulent boundary

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