KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food. Engg) 2014 Admission
III[rd] Semester Final Examination-January -2016

Cat. No: Cien.2105 **Marks: 50.00**
Title: Fluid mechanics (2+1) **Time: 2 hours**

I Fill up the blanks **(10 x 1=10)**

1. Surface tension is caused by _____ force in liquid
2. _____is the ratio of actual velocity at vena contracta to the theoretical velocity
3. The vertical distance between the centre line of the pump and the water surface in the tank to which water is delivered is called_____
4. Specific volume is the reciprocal of _____
5. A device used for measuring pressure at a point in a fluid is _____
6. The pressure at any point in a fluid is defined as the _____per unit area
7. The SI unit of surface tension is _____

State True or False

8. Laminar flow is that type of flow in which the fluid particles move in a zig zag way
9. Two streamlines cannot cross each other
10. Drag acts parallel to the surface

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

1. State Darcy's formula
2. State Chezy's formula
3. State Von Karman equation
4. Define drag coefficient
5. Define meta centre
6. Define vapour pressure
7. Define a real fluid

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

1. Describe the working principle of a pitot tube with a neat diagram
2. Find the discharge through a rectangular orifice 2 m wide and 1.5 m deep fitted to a water tank. The water level in the tank is 3 m above the top edge of the orifice .Take C_d =0. 62
3. State Bernoulli's theorem. Mention the assumption made. List out its engineering application

4. Discuss briefly about boundary layer theory for laminar boundary
5. Discuss the concept of the boundary layer with reference to fluid motion over a flat plate
6. Explain the fluidization phenomenon with basic principles and conditions of fluidization
7. Write short note on Newton's law of viscosity

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

1. Water under a constant head of 4.5 m discharge through a cylindrical mouthpiece 50 mm diameter and 150 mm long .If C_c for the orifice is 0.60, find (i) the discharge in litres per second ; (b) the coefficient of discharge
2. Discuss in detail about construction and working of a centrifugal pump with a neat sketch .What are the important aspects to be considered in the design of pumps?