KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Agri. Engg) 2018 Admission
II Semester Final Examination- June 2019

Iden.1202   **Fluid Mechanics and Open Channel Hydraulics (2+1)**

Marks: 50

Time: 2 hours

I   A   Fill in the blanks.   (10x1=10)

1   For laminar flow Reynolds's number value will be_____

2   Pitot tube is used for measurement of _____

3   Coefficient of discharge for Triangular Notch is_____

4   If the velocity, pressure, density etc at a point do not change with time, the flow is called _____

5   One atm of pressure is equivalent to_____

6   Continuity equation deals with the law of conservation of_____

7   The ratio of inertia force to viscous force is known as_____

8   The hydraulic mean depth is given by _____

9   Stoke is the unit of_____

10   The flow rate through a circular pipe is measured by_____

II   Write Short notes on any FIVE of the following   (5x2=10)

1   Forces acting on fluid in motion.

2   Major and minor energy losses in pipe

3   Hydraulic jump

4   Derive the conditions for most economical rectangular channel section

5   Distinguish between Sub critical and super Critical flow

6   Distinguish between Notches and Weirs

7   Differential manometers and mechanical gauges

III   Answer any FIVE of the following.   (5x4=20)

1   Derive an equation for Darcy-weisbach formula for loss of head in pipes.

2   Derive Bernouli's equation of fluid in motion

3   The flow is at the rate of 0.015 m³/s through a 100 mm diameter. Orifice used in a 200 mm pipe. What is the difference of pressure head between the upstream section and the vena contraction section? Take co-efficient of contraction Cc=0.60 & Cv =1.0.

4   A simple U tube Manometer is installed across an orifice meter. The manometer is filled with mercury (Sp. Gravity = 13.6) and the liquid above the mercury is carbon tetrachloride (Sp. gravity = 1.6). The manometer reads 200 mm. What is the pressure difference over the manometer in newtons per square metre.

5   The water is flowing through a pipe having 200 mm and 100 mm at sections 1 and 2 respectively. The rate of flow through the pipe is 40l/s. The section 1 is 6m above datum and section 2 is 4m above datum. If the pressure at section 1 is 400 kN/m². Find the intensity of pressure at section 2.

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6   Types of Venturimeter and its specific usage.

7   Three pipes of lengths 800 m, 500 m and 400 m and of diameters 500 mm, 400 mm and 300 mm respectively are connected in series. These pipes are to be replaced by a single pipe of length 1700 m. Find the diameter of the single pipe.

IV   **Answer any ONE of the following**   **(1x10=10)**

1   Flow net construction

2   Application of Dimensional analysis

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