



**KERALA AGRICULTURAL UNIVERSITY**  
**B. Tech. (Agrl. Engg.) 2024 Admission**  
**III Semester Final Examination – January 2026**

SWC 2104

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

**Marks: 50**  
**Time: 2 hours**

**I**

**Fill in the blanks**

**(10x1=10)**

1. If the density varies linearly with height the pressure will vary .....with height.
2. The pressure in a fluid at rest..... with depth.
3. For a supercritical flow Froude number should be .....
4. As roughness increases Mannings coefficient will .....
5. If there are n variables and m dimensions,  $\pi$ -theorem states that ..... dimensionless parameters can be obtained.
6. Euler number is used in the study of .....flows.
7. The frictional losses in globe valve are .....compared to that in gate valve.

**State True or False**

8. As Mannings constant increases the flow will increases.
9. Unit of Dynamic Viscosity is Pa.s.
10. When the metacentric height is zero the floating body will be in stable equilibrium.

**II**

**Write short notes on ANY FIVE of the following**

**(5x2=10)**

1. Define "Compressibility" and "Bulk Modulus."
2. Give the basic principle involved in measuring the pressure difference using manometers.
3. Why do we observe "Spherical shape" for a drop of liquid?
4. Write the working principle of Pitot tube.
5. What is the basic difference between a pump and a turbine?
6. Define "Reynolds number".
7. What is the "vena contracta"? How it is formed?

**III**

**Answer ANY FIVE of the following**

**(5x4=20)**

1. Distinguish between Newtonian and non-Newtonian Fluids. Give examples.
2. Discuss the application of Pascal's law.
3. Define "metacenter" and "metacentric height".
4. What are the applications and limitations of Bernoulli's equation?
5. Distinguish between Major losses and minor losses.
6. Define the following:
  - (i) Boundary layer thickness
  - (ii) Displacement thickness
  - (iii) momentum thickness and
  - (iv) energy thickness
7. Compare Venturimeter and orifice meter.

**IV**

**Write an essay on ANY ONE of the following**

**(1x10=10)**

1. Explain the basic principle involved in measuring pressure and pressure difference using manometers.
2. Discuss the concepts of stream lines, path lines, streak lines, and Time lines with the help of relevant figures.

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