

QUESTION BANK (G SCHEME)

NAME OF SUBJECT: FLUID FLOW OPERATION

SUBJECT CODE: 17426

SEMESTER: FOURTH

UNIT TEST: I

COURSE: CH

Chapter 1-Introduction to fluids(12 marks)

3 marks question

1. Define compressible fluids and incompressible fluids.
2. Define Newtonian and Non Newtonian fluids
3. Define steady state and unsteady state.
4. Define dynamic viscosity and kinematics viscosity. Give its unit.
5. Define Newton's law of viscosity. Give the mathematical expression.
6. Define mass velocity, potential flow and fully developed flow.

4 marks question

- 7 Draw the diagram of U tube manometer and mark the parts.
8. Find the pressure in N/m^2 due to a column of
 - a) 10 cm of water
 - b) 10 cm of Hg (specific gravity of mercury is 13.6)

Chapter 2 Flow of fluids(28 marks)

3 marks question

9. Define Fanning's friction factor. Give its value for laminar and turbulent flow.
10. When the pipe is said to be hydraulically smooth? Define equivalent length. Give the Significance of N_{Re} .
11. Write the formula for Reynolds number and explain the terms.
12. Water is flowing through a pipe of 3cm diameter at a velocity of 5cm/s. Suddenly it enters a pipe of diameter 5cm. Calculate the frictional loss due to sudden expansion of flow area?
13. Find the critical velocity when water is flowing through a pipe of 10cm diameter?
14. Find the fanning's friction factor when water is flowing through a pipe of 4cm diameter at a velocity of 7cm/s.

4 marks question

15. Draw the velocity profile when fluid is flowing through a straight pipe. Give the relation between U and U_{max}
16. Derive equation of continuity.
17. Give the Bernoulli's equation and explain the terms.
18. Explain the kinetic energy correction used in Bernoulli's equation.
19. Give the Hagen Poiseuille's equation and explain the terms.
20. Give the significance of terms used in Bernoulli's equation.
21. Show that N_{Re} is dimensionless.
22. Explain why correction for fluid friction is done in Bernoulli's equation?
23. Find the friction factor when water is flowing through a 1.5cm diameter pipe at a Velocity of 2cm/s.
24. CCl_4 is flowing through a 3.5 cm diameter pipe. Suddenly it enters a pipe of diameter of 2cm. Velocity in the small diameter pipe is 2.5cm/s. Calculate the

frictional loss due to sudden contraction of flow area.

25. Calculate NRe if fluid of specific gravity 1.1 and viscosity 0.97 cp is flowing through a 3cm diameter pipe at a velocity 2m/s.