



ASSIGNMENT NO. 5

SUBJECT: PHYSICS

CLASS-XI

NOV,2025

CH: 9- (MECHANICAL PROPERTIES OF FLUIDS)

1. State Stoke's law. Deduce it on the basis of dimensional considerations.
2. State Poiseuille's formula. Deduce it on the basis of dimensional considerations.
3. What is terminal velocity? Derive an expression for the terminal velocity of a body falling freely in a viscous medium. On what factors does it depend.
4. Derive equation of continuity.
5. State and prove Bernoulli's principle or Bernoulli's theorem.
6. Derive an expression for excess pressure inside a liquid drop and soap bubble.
7. Discuss how a liquid rises or falls in a capillary tube hence derive ascent formula.

CH: 10 Thermal properties of Matter

1. What is meant by coefficient of linear expansion, superficial expansion and cubical expansion? derive the relation between them.
2. Prove that the coefficient of cubical expansion of an ideal gas at constant pressure is equal to the reciprocal of its absolute temperature.
3. Define coefficient of thermal conductivity. Write its S.I unit.
4. Define Newton's law of cooling, write the expression.
5. State Wein's displacement law.

CH: 11 Thermodynamics

6. State Zeroth law of thermodynamics.
7. State First law of thermodynamics.
8. State Second law of thermodynamics.
9. Derive an expression for work done in an isothermal process by an ideal gas.
10. Derive a formula for the work done by an ideal gas in an adiabatic process.
11. Derive a relation between two principle specific heats of a gas or derive Mayer's formula.
12. Show that slope in adiabatic process is γ times the slope in isothermal process.