

**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. Zeroth law of thermodynamics.
7. First law of thermodynamics.
8. 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  $\gamma$  times the slope in isothermal process.

**CH: 12 Kinetic Theory**

13. Derive an expression for the pressure due to an ideal gas.
14. Kinetic interpretation of temperature.
15. State the law of equipartition of energy.
16. Define degree of freedom. Calculate the degrees of freedom of monoatomic, diatomic and triatomic gas molecules.
17. What is meant by mean free path of a gas molecule? Derive an expression for it. On which factors does it depend?