BS/2110

10375/NH

Paper - III
Physical Chemistry

Max. Marks : 26 Marks   Max. Time : 3 hrs
Min. Pass Marks : 35%

Candidates are required to attempt two questions (4 marks each) selecting each from section A & B. Section C is compulsory (2 marks each question).

SECTION – A

1. Discuss (a) System and Surroundings, (b) State and Path functions?
2. Derive an expression for the work done in the isothermal reversible expansion of a real gas?
3. State and explain second law of thermodynamics?
4. State and prove carnot theorem?

SECTION – B

5. Derive an expression for entropy of mixing of ideal gases?
6. Prove that $-\Delta G$ is the measure of the maximum net work that can be obtained from a system at constant temperature and pressure
7. Derive Gibb's Helmholtz equation in terms of free energy change and enthalpy change at constant pressure?
8. Derive the Clapeyron equation for the liquid to vapour phase transition.

SECTION – C

9. (a) Discuss heat capacity?
   (b) Discuss enthalpy and entropy?
   (c) Derive the expression $\Delta A = RT \ln V_1/V_2$?
   (d) Define Nernst heat theorem?
   (e) Define equilibrium constant?