

Sri Aurobindo College
B.Sc 1st Year – 2nd Semester
Assignment Physical Chemistry

M.M-100

- 1) a) What is the difference between Reversible and Irreversible Process?
 - b) Define State function.
 - c) What do you mean by residual entropy?
 - d) State and Explain Carnot theorem.
- 2) If pressure, volume and temperature of one mole of a gas are related as $(P+a/V^2)V= RT$, show that P is a state function and dP is an exact differential.
- 3) State Laws of thermodynamics (Zeroth, First, Second and Third law).
- 4) Derive $C_p - C_v = [(dU/dV)_T + P] (dV/dT)_p$
- 5) Derive $w = -2.303nRT \log V_2/V_1$
- 6) Derive $TV^{\gamma-1} = \text{Constant}$
- 7) a) Define Hess Law and write its application.
 - b) Write limitation of First law of Thermodynamics.
 - c) Define and explain the term free energy.
- 8) Derive Kirchoff's Equation.
- 9) a) What do you mean by extensive and intensive properties ?
 - b) What is the physical significance of Enthalpy?
 - c) Explain why C_p is always greater than C_v .
- 10) Derive Gibbs-Helmholtz Equation.
- 11) a) Write limitation of Arrhenius theory.
 - b) Explain Common ion effect.
- 12) Calculate pH of a buffer solution.
- 13) Write the expression for the a) Hydrolysis constant b) Degree of Hydrolysis c) pH of salt of strong acid and weak base.
- 14) a) What do you mean by solubility product.
 - b) Calculate the molar solubility of Ag_2CrO_4 in water at 25°C if $K_{sp} = 8.5 \times 10^{-32}$