

Ramananda College
Bishnupur * Bankura
Pin – 722122, West Bengal

Chemistry Honours (Semester 4) – Practical Exam 2021
Core P8 – Physical Chemistry III Lab

Course Code: UG/CHEM/401/C-8

Course Title: Physical Chemistry III (P8)

Full Marks: 15

Time: 2 hr

Answer *any one* question from following

1. Briefly discuss the principle and the procedure of determination of solubility of potassium hydrogen tartarate (KHTa, a sparingly soluble salt) in 0.03 M aqueous KCl solution. What is the effect of ionic strength on concentration solubility product (K_s)? Calculate solubility of KHTa in 0.03 M KCl solution. (Given, $K_s = 1.984 \times 10^{-3}$ for KHTa)

(10+3+2)
2. Briefly discuss the principle and the procedure of potentiometric titration of Mohr's salt against 0.5 N $K_2Cr_2O_7$ solution. Write appropriate cell diagram for this potentiometric titration method. Show a qualitative plot of $\frac{\Delta E_{Cell}}{\Delta V}$ vs V and explain how the equivalence point of titration can be determined from this plot, here E_{Cell} is the corresponding cell EMF and V is the volume of $K_2Cr_2O_7$ solution.

(10+2+3)
3. Define phase of a thermodynamic system. Briefly discuss the principle and the procedure of determination of critical solution temperature (CST) of binary mixture of phenol and water. Show a qualitative phase diagram of Temperature vs Mole fraction of phenol in water and explain different parts of the phase diagram.

(2+10+3)