CH P 409: PHYSICAL CHEMISTRY PRACTICALS - I

(Any 12 experiments are to be carried out)

COURSE OUTCOME:

- Experiments have been designed which make use of the concepts of electrochemistry, thermodynamics, solution chemistry and surface chemistry.
- Students get hands on experience in use of various instruments.
- It will be able to understand the theoretical concepts.
- To learn Specific and molar refractivity, viscocity, parachor etc.

1. (a) Determination of transport number of Cd^{2+} and SO_4^{2-} ions by EMF method.
   (b) Determination of thermodynamic parameters of a cell reaction by EMF method.
2. Determination of pK values phosphoric acid by potentiometric/pH metric method
3. Potentiometric titration of halides in mixtures (Cl^-, Br^- and I^-) with silver nitrate
4. Verification of Nernst equation for Ag^+, $Cu^{2+}$and Zn^{2+} species.
5. Determination of Solubility product and the Instability constant by potentiometric method.
6. Potentiometric determination of solubility of insoluble silver halide and the standard electrode potential using quinhydrone electrode.
7. Conductometric titrations of displacement and precipitation reactions.
8. Determination of equivalent conductance and dissociation constants of weak acid and base.
9. Determination of solubility of lead iodide at different T & hence molar heat of solution
11. Determination of hydrolysis constant of aniline hydrochloride.
11. Determination of degree of hydrolysis of CH_3CO_2Na and NH_4Cl by conductivity method.
12. Determination of Critical Micelle concentration by conductometric method.
13. Determination of pH of buffer solutions with a pH meter & evaluation of pK_a of acids
14. Verification of Walden`s rule (relation between viscosity of a solution and the electrical conductivity.
15. Study of variation of viscosity of a liquid with temperature
16. Determination of parachor value for CH_2 group and some elements by Surface Tension method,
17. Determination of the composition of a solution by S.T measurement .
18. Determination of the Critical Micelle Concentration by surface tension/spectrophotometric measurements.
19. Determination of the composition of Zinc Ferrocyanide complex by Potentiometric titrations.
20. Determination of Specific and molar refractivity of liquids and paracor value of a species by refractometric method.

Any other relevant experiments of interest.

REFERENCES:

1. Findlay's Practical Physical Chemistry- B. P. Levitt (Longman, London).
2. Experiments in Physical Chemistry– James and Prichard.
3. Experimental Physical Chemistry - Daniels et al.
4. Experimental Physical Chemistry-Das & Behera (Tata McGraw Hill, New Delhi)1983.
5. Advanced Practical Physical Chemistry–Yadav (1989).
6. Experiments in Physical Chemistry–J. C. Ghosh (Bharathi Bhavan)1974.
7.Practical Physical Chemistry-B Viswanathan & P.S Raghavan,(ViVa Books, New Delhi) 2005.