FIRST YEAR CHEMISTRY PRACTICALS

TIME: 5 Hrs.(one day) **M.M. 50**

Distribution of Marks Marks

Exercises-

1. Semi-micro Analysis of Inorganic mixture containing five radicals (excluding Na^+ and K^+) **15**

2. (i) Detection of extra elements (N, S, and halogen) if any and functional groups in given simple organic compounds. **10**

   (ii) Purification of the given organic compounds by crystallisation (charcoal) sublimation and determination of its m.p. **05**

   OR

   Determination of mixed melting points using urea-cinnamic acid mixtures of given compositions.

3. ONE physical Chemistry experiment **10**

4. Viva- Voce **05**

5. Records **05**

List of Experiments:

1. **Semi-micro Analysis of Inorganic mixture:** The mixture shall contain **Five** radicals at least two cations & two anions) soluble in water or in HCl. Two cations of the same group except II A & II B may be given. Not more than one interfering radical may be given. Interfering radical may not be given with typical anion combinations.

2. **(i)** Detection of extra elements (N,S, and halogen) if any and functional group in given simple organic compounds. (one organic compound from the following list be given for identification).

   Carboxylic acids, Phenols, Alcohols, Carbohydrates, Aldehydes, Ketones, Nitro

   Compounds, Amino compounds, Anilides, Amides, Esters, Thioamide,

   Hydrocarbons, Halogen containing compounds

   (ii) Crystallization:

   Concept of induction of crystallization

   Phthalic acid from hot water (using fluted filter paper and stemless funnel)

   Acetanilide from boiling water

   Naphthalene from ethanol

   Benzoic acid from water

Decolourisation and crystallization using charcoal

Crystallization and decolourisation of impure naphthalene (100 g of naphthalene mixed with 0.3 of Congo Red using 1 g decolourising carbon) from ethanol.

Simple Sublimation : Camphor, Naphthalene, Phthalic acid and Succinic acid.

Mixed Melting Point determination

Urea- Cinnamic acid mixture of various compositions (1:4, 1:1, 4:1)

3. **Physical Chemistry Experiments-** Any one of the following experiments may be given in the examination.

Distribution Law

(i) To study the distribution of iodine between water and CCl_4.

(ii) To study the distribution of benzoic acid between benzene and water.

(iii) To study the distribution of acetic acid between benzene and water

Colloids:

To prepare arsenious sulphide sol and compare the precipitating power of mono-, bi- and trivalent anions.

Viscosity and Surface Tension

(i) To determine the percentage composition of a giv mixture (non interacting systems) by viscosi method.

(ii) To determine the percentage composition of a give binary mixture by surface tension method

(iii) To determine the parachor value of – CH_2 – group.

(iv) To determine the rheochor value of – CH_2 – group.

Transition Temperature

(i) Determination of the transition temperature of the given substance by thermometric/ dialometric method (e.g.: $MnCl_2 . 4H_2O$, $SrBr_2 . 2H_2O$)

Thermochemistry

(i) To determine the solubility of benzoic acid at different temperatures and to determine ΔH of the dissolution process

(ii) To determine the enthalpy of neutralisation of a weak acid/ weak base versus strong base/ strong acid and determine the enthalpy of ionisation of the weak acid/ weak base

(iii) To determine the enthalpy of solution of solid calcium chloride and calculate the lattice energy of calcium chloride from its enthalpy data using Born-Haber cycle.

Books Recommended:

1. Practical Chemistry - Giri, Bajpai and Pandey, S. Chand & Co. Ltd. New Delhi
2. Laboratory Manuel in Organic Chemistry, R.K. Bansal, Willey Eastern
3. Experimental Organic Chemistry Vol.I & II, P.R. Singh, D.S. Gupta & K.S. Bajpai, Tata McGraw Hill.
4. Experiments in Physical Chemistry- J.C. Ghose, Bharti Bhawan
5. Experiments in General Chemistry, N.R. Rao & U.C. Agarwal, Eastern Press
6. Practical Chemistry- Suresh Ameta & P.B. Punjabi, Himanshu Publication.