DEVI AHILYA VISHWAVIDYALAYA, INDORE

M. Sc. CHEMISTRY PRACTICALS (SEMESTER – II)

Practical examination shall be conducted separately for each branch : (Duration : 6-8 hrs in each branch).

Inorganic Chemistry

Chromatography		12
Preparations		12
Record		04
Viva-Voce		05
	Total :	33

Chromatography : Separation, identification & determination of cations & anions by Column Chromatography : Ion exchange.

Preparations : Preparation of selected inorganic complexes, their analysis, test & characterization by spectral techniques (may be).

(1) $K_3[Cr(SCN)_6].4H_2O$.
(2) $[Co(NH_3)_4(NO_2)_2]Cl$.
(3) $[Co(NH_3)_5Cl]Cl_2$.
(4) $Ni(dmg)_2$.
(5) $[Co(py)_2Cl_2]$.
(6) $[Cu.3[CS(NH_2)]_2SO_4.2H_2O$.
(7) $Na_3[Co(NO_2)_6]$.

Organic Chemistry

Organic Synthesis		12
Quantitative Analysis		12
Record		04
Viva-Voce		05
	Total :	33

Organic Synthesis :

(A) Synthesis involving name reactions :

(i) Sandmeyer's reaction.
(ii) Cannizaro's reaction.
(iii) Diel's Alder reaction.
(iv) Knoevenagel reaction.

2.9.16 Sharma 2-9-2016 29.16 2/9/16 5-9-2016

(B) Synthesis of Dyes :

(i) Phenolphthalein, (ii) Fluoroscein, (iii) Diazotization followed by coupling.

Quantitative Estimations :

1. Determination of the percentage or number of hydroxyl groups in an organic compound by Acetylation method.
2. Estimation of amines / phenols using Bromate – Bromide solution or Acetylation method.
3. Saponification value, iodine value & acid values of an oil or fat.

Physical Chemistry

Any **one** Experiment / Exercise from **Section – A**		12
Any **one** Experiment / Exercise from **Section – B**		13
Record		04
Viva-Voce		05
	Total :	34

Section – A

Conductometry

(i) Determination of the velocity constant, order of the reaction & energy activation for saponification of ethyl acetate by sodium hydroxide conducotmetrically.

(ii) Determination of solubility & solubility product of sparingly soluble salts (e.g., $PbSO_4$, $BaSO_4$) conductometrically.

(iii) Determination of the strength of strong & weak acid in a given mixture conductometrically.

(iv) To study the effect of solvent on the conductance of $AgNO_3$ / acetic acid & to determine the degree of dissociation & equilibrium constant in different solvents & in their mixtures (DMSO, DMF, dioxane, acetone, water) & to test the validity of Debye – Huckel – Onsager theory.

(v) Determination of the activity coefficient of zinc ions in the solution of 0.002M zinc sulphate using Debye Huckel's limiting law.

Polarimetry

(i) Determination of rate constant for hydrolysis / inversion of sugar using a polarimeter.

(ii) Enzyme kinetics – inversion of sucrose.

Section – B

Potentiometry / pH metry

1. Determination of strengths of halides in a mixture potentiometrically.
2. Determination of the strengths of strong & weak acids in a given mixture using a Potentiometer / pH-meter.
3. Determination of temperature dependence of EMF of a cell.
4. Determination of the formation constant of silver – ammonia complex & stoichiometry of the complex Potentiometrically.
5. Acid – base titration in a non – aqueous media using a pH-meter.

Refractometry

Determination of Refractive indices & specific refractions, Molar & atomic refractivities, composition of a mixture of liquids, concentration of sugar in a solution & polarizabilities of liquids.

Books suggested

1. Vogel's Textbook of Quantitative Analysis, revised, J. Bassett, R.C. Denney, G.H. Jeffery and J. Mendham, ELBS.
2. Synthesis and Characterization of Inorganic Compounds, W.L. Jolly. Prentice Hall.
3. Experiments and Techniques in Organic Chemistry, D.P. Pasto, C. Johnson and M. Miller, Prentice Hall.
4. Macroscale and Microscale Organic Experiments, K.L. Williamson, D.C. Health.
5. Systematic Qualitative Organic Analysis, H. Middleton, Adward Arnold.
6. Handbook of Organic Analysis-qualitative and Quantitative, H. Clark, Adward Arnold.
7. Vogel's Textbook of Practical Organic Chemistry, A.R. Tatchell, John Wiley.
8. Practical Physical Chemistry, A.M. James and F.E. Prichard, Longman.
9. Findley's Practical Physical chemistry, B.P. Levitt, Longman.
10. Experimental Physical Chemistry, R.C. Das and B. Behera, Tata McGraw Hill.