CHM-243(P) – Chemistry Practical

Chemistry Lab- I (2 credit) + Chemistry Lab- II (2 credit)

Total Credit – 4, Hours – 120, Marks = 100

Course Outcomes:

After the completion of this course, student will be able to-

CO-1. Gain the fundamental and basic knowledge of organic qualitative analysis inorganic quantitative analysis.

CO-2. Understand the basic concepts and principles of different organic functional groups and gravimetric & volumetric analysis.

CO-3. Use the skill of accuracy during the gravimetric and volumetric analysis and identify the given organic substance.

CO-4. Analyse and conclude the facts regarding the organic qualitative analysis and inorganic quantitative analysis.

CO-5. Evaluate, judge and defend the different types of tests involves in the organic spotting.

CO-6. Synthesise, Create, modify and develop the new techniques for the gravimetric and volumetric analysis.

CO-PSO mapping (connecting COs with PSOs)

CO	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	3	2	3	2	2
CO-2	3	3	2	2	2	3
CO-3	2	3	3	2	3	2
CO-4	3	2	3	3	2	3
CO-5	3	2	3	2	2	3
CO-6	3	3	3	2	2	3

CHEMISTRY LAB – I

Credit – 2, Hours – 60, Marks - 50

ORGANIC CHEMISTRY PRACTICAL

Organic spotting, Derivative preparation, study the concept of purification: crystallization/distillation
(Minimum Fifteen (15) compounds: (9 solids and 6 liquids))
Acids: Salicylic acid, Cinnamic acid, Anthranilic acid, Sulfanilic acid, Phthalic acid
Phenols: p-Nitrophenol, 1-Naphthol, 2- Naphthol, Resorcinol.
Bases: m-Nitroanilines, p-Nitroanilines, p-Toluidine, aniline
Neutral: Solids: Acetanilide, Glucose, Thio-urea, Benzamide
Liquids: Chloroform, Methyl acetate, Chlorobenzene, Benzaldehyde, Acetophenone, Bromobenzene, Toluene

CHEMISTRY LAB – II

Credit – 2, Hours – 60, Marks - 50

Analytical Chemistry Practical

Gravimetric Analysis:

(1) Determine the amount of iron (Fe^{+2}) as Fe_2O_3 gravimetrically in the given solution of $FeSO_4(NH_4)_2SO_4 . 6H_2O$ or $FeSO_4 . 7H_2O$ and free H_2SO_4.
(2) Determine the amount of Aluminium (Al^{+3}) as Al_2O_3 gravimetrically in the given solution of $Al(SO_4)_3 . 18H_2O$ and free H_2SO_4.
(3) Determine the amount of Barium (Ba^{+2}) as $BaSO_4$ gravimetrically in the given solution of $BaCl_2 . 2H_2O$ and free HCl.
(4) Determine the amount of Nickel (Ni^{+2}) as Ni – (DMG) gravimetrically in the given solution of $NiCl_2 . 2H_2O$ and free HCl.

Volumetric Analysis:

(1) Determine the amount of Nitrite (NO_2^{-1}) in the given solution of KNO_2 or $NaNO_2$ by back titration using $KMnO_4$ and $FeSO_4(NH_4)_2SO_4 . 6H_2O$ solution.
(2) Determine the amount of Nickel (Ni^{+2}) in the given solution of $NiCl_2.2H_2O$ by back titration using EDTA solution.
(3) Determination of available Cl_2 in bleaching powder.
(4) Standardization of HCl with Borax.
(5) Determine the number of water molecules of crystallisation in sodium carbonate (washing soda) using 0.1 N HCl solution.
(6) Determine the amount of Acetamide in the given solution.

(7) Determine the amount of Glucose in the given solution.
(8) Determine the amount of Aniline or Phenol in the given solution.

Viva-Voce questions

REFERENCE BOOKS

1.'Elementary Practical Organic Chemistry Part-II, Qualitative Organic Analysis', by A.I Vogel, CBS Publishers & Distributers, New Delhi, Second Edition, 2004.

2.'Elementary Practical Organic Chemistry Part III Quantitative Organic Analysis', Part III Quantitative Organic Analysis", by A.I Vogel, CBS Publishers & Distributers,
New Delhi, Second Edition, 2004.

3. 'Comprehensive Practical Organic Chemistry – Qualitative Analysis', by V.K. Ahluwalia, Sunita Dhingra, First India Edition, 2010, University Press (India) Private Limited, Hyderabad,

4. 'Organic Analytical Chemistry theory and Practice' by Mohan Jag, Narosa Publication, New Delhi, 2003.

5. 'Advanced Practical Organic Chemistry' by J Leonard, B Lygo, G Procter, , Stanley Thornes Publishers Ltd., First Indian Edition, 2004.

6. 'Analytical Chemistry: Practice' by John H. Kennedy, Saunders College Publishing, New York, Second Edition, 1990.

7. 'Quantitative Analysis' by R. A. Day, A. L. Underwood, Prentice-Hall of India Pvt.Ltd., New Delhi, Sixth Edition, 2004.

8. 'Analytical Chemistry' by Gary D. Christian, , John Wiely & Sons, INC, New York, Fifth Edition, 1994.

9. 'Vogel's Qualitative analysis' by G. Svehla, Pearson Education Ltd., Seventh Edition,2009

10. 'Vogel's Textbook of Quantitative Chemical analysis' Revised by G. H. Jeffery, J. Bassett, J. Mendham & R. C. Denney, ELBS (English Language Book Society) Longman. 5th Ed., New York.