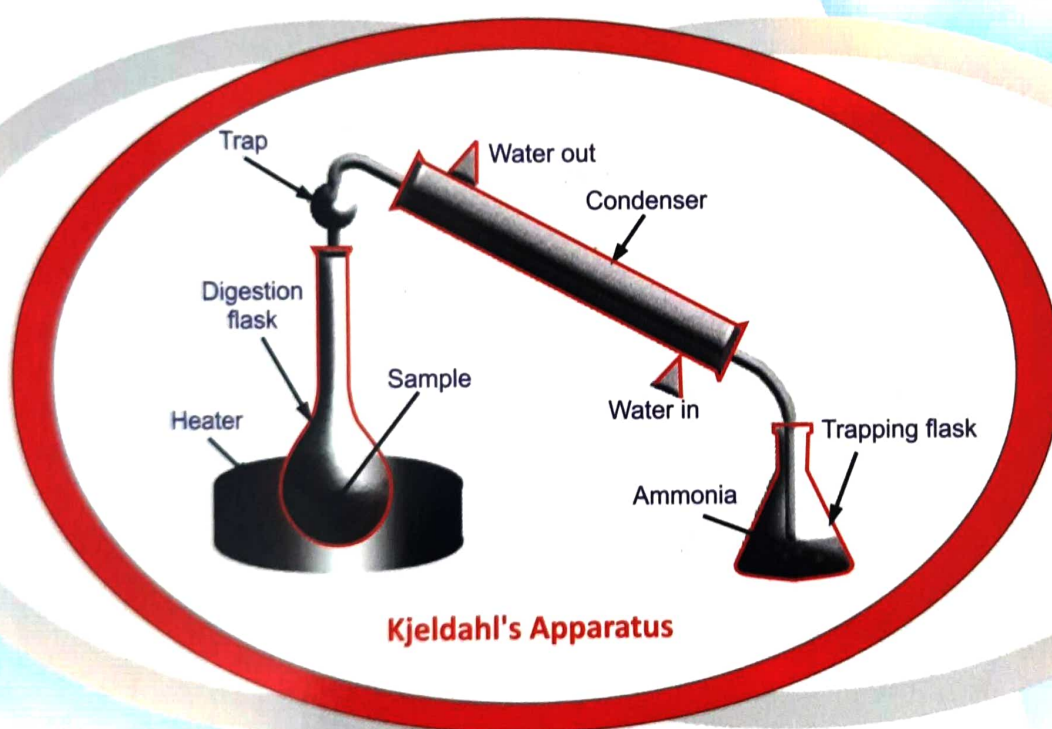


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(CHEMISTRY : DSC-4B : PAPER-IV)



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Syllabus

1. Introduction to Analytical Chemistry

(06 Hrs)

- 1.1 Introduction
- 1.2 Importance of analysis
- 1.3 Analytical processes (Qualitative and Quantitative)
- 1.4 Methods of analysis (Only classification)
- 1.5 Sampling of solids, liquids and gases
- 1.6 Errors, Types of errors (determinate and indeterminate), Methods of expressing accuracy (Absolute and relative error)
- 1.7 Significant figures, Mean, Median, Standard deviation (Numerical problems expected)

2. Chromatography

(06 Hrs)

- 2.1 Introduction, Basic principle of chromatography, Basic terms, Classification of chromatography
- 2.2 Paper chromatography – Principle, Methodology – Types of papers and treatment, Sample loading, Choice of solvent, Development – Ascending, Descending, Circular, Location of spots, Determination of R_f value, Applications, Advantages and Disadvantages.
- 2.3 Thin layer chromatography : Principle, Solvent system, Stationary phases, Preparation of TLC plate, Detecting reagents, Methodology – Sample loading, Development, Detection of spot, R_f value, Applications, Advantages and Disadvantages.
- 2.4 Comparison of paper chromatography and TLC.

3. Theory of Titrimetric Analysis

(06 Hrs)

- 3.1 Introduction
- 3.2 Acid-Base Indicators
- 3.3 Theory of indicators w.r.t. Ostwald's ionization theory and quinoid theory
- 3.4 Neutralization curves and choice of indicators for the following titrations :
 - (a) Strong acid-strong base
 - (b) Strong acid-weak base
 - (c) Strong base-weak acid

3.5 Complexometric titrations

- (a) Introduction
- (b) Types of EDTA titrations
- (c) Metallochromic indicators w.r.t. Eriochrome Black-T indicator
- (d) Indicator action of Eriochrome Black-T indicator

4. Water Analysis

(06 Hrs)

- 4.1 Physical analysis of water : pH, Conductance, Colour, Odour, Turbidity and taste
- 4.2 Chemical analysis : Total dissolved solids, Hardness, Salinity, Alkalinity, Acidity, Sulphates, Nitrates, Dissolved oxygen, Chemical oxygen demand, Biological oxygen demand.

5. Analysis of Fertilizers

(06 Hrs)

- 5.1 Introduction
- 5.2 Types of fertilizers
- 5.3 Necessity and requirements of good fertilizers
- 5.4 Sampling and sample preparation
- 5.5 Analysis of nitrogen by Kjeldahl's method
- 5.6 Analysis of phosphorus by phosphomolybdate method
- 5.7 Analysis of potassium by sodium tetraphenyl borate method

□□□

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1. Text book of Quantitative Inorganic Analysis – A.I. Vogel.
2. Instrumental Methods of Chemical Analysis – H. Kaur.
3. Instrumental Methods of Chemical Analysis – B. K. Sharma.
4. Instrumental Methods of Chemical Analysis – Chatwal Anand.
5. Fundamentals of Analytical Chemistry – Skoog and West.
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10. Chemistry for Degree students (B.Sc. First Year) : R. L. Madan (S. Chand and Company).

□□□

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