

SHREE H.N. SHUKLA GROUP OF COLLEGES

(AFFILIATED TO SAURASHTRA UNIVERSITY & GTU)



2-vaishali nagar, Near
Amrapali railway
crossing,
Raiya road, Rajkot-
360001. Ph.No.-
(0281)2440478, 2472590

3-vaishali nagar, Near
Amrapali railway
crossing,
Raiya road, Rajkot-
360001. Ph.No.-
(0281)2471645

Behind marketing yard,
Near Lalpari lake,
Between Amargadh-
Bhichri, Rajkot-360002.
Ph.No.-90990 63150

M.Sc. SEMESTER-I

C-104: ANALYTICAL CHEMISTRY

1. Basic concept of Analytical Chemistry

Introduction, scope and objectives, Classification of analytical methods. Basics of classical and instrumental methods of analysis. Method of selection, sample processing, steps of total quantitative analysis, the tools of analytical chemistry and good laboratory practises. Basic of volumetric methods of analysis: General principle, concentration units, standard solution and standardization, detection of end point, indirect and back titration techniques. Minimization of titration errors, types of reactions in titrimetric analysis.

Non-aqueous titrations: Role of solvents, properties of solvents, autoprotolysis and dielectric constant. Titration of acids-bases, solvent system, titrants, standard titration curves, effect of water, end point detection, application to determination of carboxylic acid, phenols and amines.

2. Spectroanalytical Techniques

Fundamental of spectroscopy, electromagnetic radiations and their properties. Introduction to absorption and emission spectroscopy. Lambert-Beer law. Atomic absorption spectroscopy: Basic principle, theory, instrumentation and applications. Advantages over flame photometry.

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Fluorometry and Phosphorimetry: Introduction, principle, theory, instrumentation and applications.

UV-Visible spectrophotometric titrations.

3. Edible oil Analysis

Basic terminology, analytical importance and quantitative determination of oil, fat, wax, iodine value, saponification value, RMPK value, hydroxyl value, moisture, etc. Detection of oil adulterants: (1) Argemone oil, (2) Rice bran oil, (3) Sesame oil, and (4) Palm oil.

Reference Books

1. Vogel Textbook of Quantitative Analysis, 3rd Edition.
2. Analytical Chemistry by Gary D. Christian, 6th edition(1994), John Wiley and Sons Inc. New York,
3. Principle of Instrumental Analysis by Douglas A. Skoog, 5th Edition (1998)-Saunders College of Publishing Philadelphia, London.

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4. Instrumental Methods of Chemical Analysis by Gurdeep R. Chatwal & Sham K. Anand, Himalaya Publishing House Fifth Revised and Enlarged Edition.
5. H.H. Willard, L.L. Merrit, J.A. Dean, Instrumental Methods of Analysis, 5th Edn. Van (1986).
6. Instrumental Methods of Chemical Analysis by B.K. Sharma, Goel Publishing House, Meerut(UP).