

**“&ana_iva&ana AaiNa sausaMskar yaasaazl iSaxaNap`saar”
iSaxaNamahiYa- D^a.baapUjal
saaLuMKo**

**SHRI SWAMI VIVEKANAND SHIKSHAN SANSTHA'S, KOLHAPUR
Dattajirao Kadam Arts, Science & Commerce College,
Ichalkaranji.
DEPARTMENT OF CHEMISTRY
Academic year 2023-24**

Syllabus: Basic Analytical Technique in Industry

Short Term Course
(Theory Credits: 20 lectures)

Unit I Basic Concepts in Industrial Chemistry (05)

Definition and Explanation of terms -Normality, Equivalent weight, Molarity, Molecular weight, Molality, Molarity of mixed solution, Acidity of base, Basicity of acid, ppt, ppm, ppb, ppm solutions, Mole Fraction, Weight fraction, Percentage composition by W/W, W/V, V/V, Problems based on Normality, Molarity, mole fraction, mixed solution, etc.

Unit II Introduction to Analytical Techniques (05)

Introduction, Purification of solids, Crystallization, Distillation-simple distillation and fractional distillation, Solvent extraction, Chromatographic techniques- Adsorption chromatography and partition chromatography.

Unit III Unit Operations (05)

The difference between classical chemistry and industrial chemistry, Raw material for the Chemical Industry, Material Safety data sheets, Units that make up a chemical process-unit operation and unit processes, Flow Diagrams, Block Diagram, Process flow diagram / flow sheets, Material Balances-The purpose of mass balance calculations, Material Balances for multi species, Unit operations- i) Size reduction- Principle, Jaw crusher, ball mill, ii) Size enlargement – Purpose of size enlargement, Principle- pellet mill and tumbling agglomerators iii) Separation -Magnetic separation method and Froth floatation method

Unit IV Laboratory Instrumentations. (05)

Introduction, construction and working, Applications - Conductometer, Colorimeter and spectrophotometer, P^H meter, Polarimeter

Practicals- (Practical Credits: 10 lectures)

1. To determine the percentage purity of given soda-ash sample.
2. Estimation the amount of Aspirin from given tablet.
3. Determination of titrable acidity in the given sample of milk or lassi
4. To determine the hardness of Water
5. To determine the normality of strong acid by conductometric titration.
6. To determine the unknown concentration of copper by colorimetric method
7. Determination of amount of sodium present in the given solution of common salt using cation exchange resin
8. To determine the amount of HCl in given of commercial samples.
9. To determine the specific rotation of cane sugar solution using Polarimeter.
10. To determine the amount of nitrogen from given fertilizer sample.
11. To determine the pH of given solution.
12. To separation of two component from given mixture and determine the physical constant.