

## Interdisciplinary Course in Chemistry

PAPER: CHEM-MD-IDC-Th

( Credit : Theory -02, Tutorial – 01)

Theory: (30 Lectures)

### CHEMISTRY IN DAILY LIFE

#### Module : I

(10 Lectures)

##### Dairy Products:

Composition of milk and milk products. Analysis of fat content, minerals in milk and butter. Estimation of added water in milk. Beverages: Analysis of caffeine in coffee and tea, detection of chicory in coffee, chloral hydrate in toddy, determination of methyl alcohol in alcoholic beverages.

##### Food additives, adulterants, and contaminants:

Food preservatives like benzoates, propionates, sorbates, disulphites. Artificial sweeteners: Aspartame, saccharin, dulcin, sucralose, and sodium cyclamate. Flavors: Vanillin, alkyl esters (fruit flavors), and monosodium glutamate.

##### Artificial food colorants:

Coal tar dyes and non-permitted colors and metallic salts. Analysis of pesticide residues in food.

#### Module : II

10 Lectures)

##### Vitamins:

Classification and Nomenclature. Sources, deficiency diseases, and structures of Vitamin A1, Vitamin B1, Vitamin C, Vitamin D, Vitamin E & Vitamin K1.

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##### Oils and fats:

Composition of edible oils, detection of purity, rancidity of fats and oil. Tests for adulterants like argemone oil and mineral oils. Halphen test.

##### Soaps & Detergents:

Definition, classification, manufacturing of soaps and detergents, composition and uses

#### Module : III

(10 Lectures)

##### Chemical and Renewable Energy Sources:

Principles and applications of primary & secondary batteries and fuel cells. Basics of solar energy, future energy storer.

##### Polymers:

Basic concept of polymers, classification and characteristics of polymers. Applications of polymers as plastics in electronics, automobile components, medical fields and aerospace materials. Problems of plastic waste management. Strategies for the development of environment-friendly polymers.

##### Recommended Text Books:

1. B. K. Sharma: Introduction to Industrial Chemistry, Goel Publishing, Meerut (1998)
2. Ashitosh Kar, Medicinal Chemistry ( Two Colour Edition), New Age International Pvt Ltd, 2022
3. Edward Cox Henry , The Chemical analysis of Foods , Hardcover , Hassell Street Press , 2021
4. Fred Billmeyer : Textbook of polymer science; Wiley 3<sup>rd</sup> addition.

Tutorial: (15 hours)

PAPER: CHEM-MD-IDC-Tu

1. Estimation of Vitamin C.
2. Determination of Iodine number of oil.
3. Determination of saponification number of oil.
4. Determination of methyl alcohol in alcoholic beverages.