

Course Code	Course Title	C	H	I	E	T
<b>17U6CAC4</b>	<b>ANCILLARY CHEMISTRY – IV</b> (For III Mat, III Phy and III Zoo)	4	4	25	75	100

**UNIT I THERMODYNAMICS** 12 Hrs

Scope - Terminology used in thermodynamics - Thermodynamic properties - Zeroth law of thermodynamics - First law thermodynamics. Limitation of first law of thermodynamics. Need for the II law of thermodynamics – Spontaneous and non-spontaneous processes - Entropy - Gibb's free energy - Third law of thermodynamics.

**UNIT II ELECTROCHEMISTRY** 12 Hrs

Introduction – Difference between metallic conductor and electrolytic conductor - Faraday's law of electrolysis – specific resistance – specific conductance – Equivalent conductance – Molar conductance.

Electrochemical cell – electrode potential – standard – Hydrogen electrode - EMF – determination. Reference electrodes – calomel electrode – Nernst equation.

**UNIT III COLLOIDS** 12 Hrs

Colloidal state of matter – various types – Sols – dialysis – electro osmosis – electrophoresis. Emulsion – types of emulsions with examples. Gels: classification and preparation by cooling of sols, double decomposition and by change of solvents. Application of colloids in the following fields: foods, medicine, industrial goods, rubber plating, chrome tanning, Cottrell precipitator and detergent action of soap.

**UNIT IV ALKALOIDS** 12 Hrs

Definition, extraction of alkaloids and general properties structure and biological actions of Conine, Piperine and Nicotine. Extraction of piperine from peper.

**UNIT V TERPENOIDS & DYES** 12 Hrs

Introduction - Isoprene rule - Classification and occurrence - isolation - Structure and source of Citral, Geraniol and Menthol. (Structural discussion and synthesis are not expected).

Definition and classification- preparation of Methyl Orange, Bismark brown, crystal violet and Malachite green.

**Reference books:**

- 1 Puri, B.R., Sharma, L.R. and Pathania, M.S., 2004 (41<sup>st</sup>Edn.), Principles of Physical Chemistry, S.N. Chand and Co., New Delhi.
- 2 I.L. Finar, "Organic Chemistry", Vol. I and II, 6<sup>th</sup>edn., ELBS, Singapore, 1994.
- 3 Bhal, B.S. and ArunBahl, 2004, Advanced Organic Chemistry, S. Chand and Co. Ltd., New Delhi.