

Course Code	Course Title	C	H	I	E	T
17U1CAC1	ANCILLARY CHEMISTRY – I (For I Mic Bio)	4	4	25	75	100

OBJECTIVES

To empower the students to

- (i) study the models of an atom, electronic configuration, shapes of orbitals,
- (ii) know the classification, importance and types of organic reactions,
- (iii) study the types of bonds and hybridization,
- (iv) understand the types of adsorption, process and factors affecting it,
- (v) study the types of catalysis and applications.

LEARNING OUTCOME

- Understanding the basics of organic, inorganic and physical chemistry.
- Skill and applicability of knowledge in pharma and analytical industries.

UNIT I ATOMIC STRUCTURE 12 Hrs

Brief introduction to structure of atom - Rutherford and Niels Bohr's model of an atom and their defects - Sommerfeld's modification of atomic structure Electronic configuration and quantum numbers - Orbitals-shapes of s, p and d orbitals. - Pauli's exclusion principle - Hund's rule of maximum multiplicity - Aufbau principle - Heisenberg's uncertainty principle.

UNIT II INTRODUCTION TO ORGANIC CHEMISTRY 12 Hrs

Importance of organic compounds in daily life – Classification of organic compounds. Functional groups – definition – various functional groups - General formula and examples for the following: Alcohols, Alkyl Halide, Carbonyl compounds, Carboxylic acids and Amines. Types of organic reactions – Substitution, Addition and Elimination reactions (examples only, not mechanism)

UNIT III CHEMICAL BONDING 12 Hrs

Types of Bonds – electrovalent, ionic, covalent, co-ordinate covalent, metallic and H-bonding. Characteristics of electrovalent and covalent compounds. VB Theory - Types of overlapping (s-s, s-p and p-p overlapping), Sigma and pi bonds, Hybridisation- sp^3 , sp^2 and sp hybridisation in methane, ethylene & acetylene only.

UNIT IV SURFACE CHEMISTRY

12 Hrs

Definition of adsorption, occlusion, absorption, adsorbent, adsorbate – Types of adsorption: Physisorption and chemisorption – differences between physisorption and chemisorption – applications of adsorptions – factors influencing adsorption process.

UNIT V CATALYSIS

12 Hrs

Definition, Characteristics of catalysts - Types of catalyst (Homogeneous and heterogeneous) – Acid base catalysis – Enzyme catalysis with example only: positive, negative and auto catalysis – catalytic promoters – catalytic poison.

Reference books:

1. Puri, B.R., Sharma, L.R. and Pathania, M.S., 2004 (41stEdn.), Principles of Physical Chemistry, S.N. Chand and Co., New Delhi.
2. Bhal, B.S. and ArunBahl, 2004, Advanced Organic Chemistry, S. Chand and Co. Ltd., New Delhi.
3. SathyaPrakash, Tuli, Basu& Madan, 1999, Advanced Inorganic Chemistry. Vol. II , 17th Revised Edition, S. Chand and Co. Ltd., Ram Nagar., New Delhi.
4. Puri. B.R., Sharma. L.R., 1989, Principles of Inorganic Chemistry, ShobhanLalNagin Chand and Co., Jalandar.