IV - SEMESTER

Paper IV- Natural Products and Biopolymers-Il

St.udy of isolation, structure, stereochemistry, synthesis, biogenesis and biological properties of the following classes of natural products from plant, animal, and microbial sources and biopolymers.

UNIT-1

Acetogenins and shikimates:

Prostaglandin 15 R F GAy podophyllotoxin, etoposide and rotenone.

UNIT-II

Terpenes and Ste.roids:

cholesterol, progesterone And - amyrin •

UNIT-III

Alkaloids:

strychnine, colchicines and camptothecin.

UNIT-IV

Nucleic acids: Basic concepts of the structures of RNA and DNA and their hydrolysis products nucleotides, nucleosides and heterocyclic bases.

Reference Material:

1) Organic Chemistry, Volume 2, Stereochemistry and chemistry of natural products, I.L. Finar, 5th Edition. ELBS, 1975 (overall and for Unit IA., cholesterol, progesterone, and Unit TV).

2) Chemical A spects of Biosynthesis, John Mann, Oxford University Press, Oxford, 1996

3) Chemistiy of Natural Productc· . A Unified Approach, N.R. Krishnaswamy, Universe.y Press (India) Ltd., Orient Longman Limited, Hyderabad, 1999. (Overall and for certain aspects of rotenone, .-amyrin, strychnine, and colchicines).

Primary literature, For Unit 1,Unit III (minus morphine) and Details and copy of the

relevant material are available with the Department of Organic Chemistry, FD & W,

Andhra University, Visakhapatnam. IV-SEMESTER

Paper III - Organic Synthesis-II

UNIT-I

Organo silanes. Synthetic applications of trimethylsilyl chloride dimethyl-t-butylsilyl chloride, trimetthylsilyl cyanide, trimethylsilyl iodide and trimethylsilyl triflate, synthetic applications of·. silyl carbanion and B-silyl carbonium ions.

Phase transfer catalysis-Principle and applications.

UNIT-II

Oxidation: Oxidations of hydrocarbons, aikenes, alcohols aldehydes and ketones oxidative coupling reactions. Use of Pb (OAC)4, NBs.. CRO3, SeO2, NinO2 Dc- alkoxyluphonium yields, KMnO4, OsO4, peracids and Ti (III) nitrate.

UNIT-III

REDUCTION: Catalytic hydrogenation (homogeneous and heterogeneous), reduction by dissolving metals. reduction by hydride transfer -reagents, reduction with hydrazine and diamide, selectivity in reduction of nitroso and ritro compounds, reductive cleavage.

UNIT-IV

Design of Orgauie Synthesis: Retrosynthesis the disconnection approach-basic principles convergent and linear synthesis.

Textbooks:

1) Some Modern Methods of Organic Synthesis W. Carothers, Third Edition,

Cambridge University Press, Cambridge, 1988.

2) Organic Synthesis: The disconnection approach, S. Warrant John Wiley & sons,

New York, 1984.

Books for Reference:

1) Modern Synthetic Reactions, Herbet O. Horase, Second Edition, W.A. Benzamine

Inc. Menio Park, California, 1972.

2) Organic Synthesis viz Boranes, Herbet C. Brown Gray, W. Kramer Alan B. Levy and M. Mark Midland John Wiely &. Sons, New York, 1975.