Separation, purification, analysis and derivatization of ternary mixture of organic compounds, Identification, separation and qualitative analysis of the individual compounds and preparation of suitable derivative for each component, identification of derivative by m.p., TLC and spectral techniques.

References:-

1. Elementary Practical Organic Chemistry-Vol. III: quantitative Organic Analysis- A.I Vogel
2. Vogel's Text Book of Practical Organic Chemistry- Furniss et al. (ELBS, London)1978.
3. Experimental Organic Chemistry- Vol. I &II- P.R.Singh (Tata McGraw-Hill) 1981.
4. Practical Organic Chemistry- IV Ed- Dey &.Sitaraman (Allied)
5. Laboratory Experiments in Organic Chemistry-Adam, Johnson & Wicon (McMillan, London) 1979.
6. Experimental Organic Chemistry- H. D. Durst & G. E. Goke (McGraw-Hill)1980

4th SEMESTER

OC H 551: Organic Synthetic Methods

COURSE OUTCOME:

Enable the students:

- To acquire knowledge on the various reagents employed for oxidation and reduction of various kinds of organic molecules.
- To understand the various methods of halogenations of carbonyl compounds, benzylic and allylic halogenations.
- To learn the principles and technologies used in disconnection approach,
- To study the utility of protecting group strategy in organic synthesis and retrosynthetic analysis.

UNIT-I: **[15 Hours]**

Reduction Reactions: Catalytic hydrogenation-Introduction, catalysts and solventsemployed, reduction of functional groups, mechanisms and stereochemistry of catalytic hydrogenations, Hydrogenolysis, homogeneous catalytic hydrogenation.

Metal hydride reduction: Reduction with $LiAlH_4$, $NaBH_4$,BH_3, $AlH_3$and DIBAL.Stereochemistry of reduction, Functional group transformation during reduction, Reduction with diborane and related reactions. Reduction with Trimethylsilane. Reduction in Biological systems-NADH, FAD.

Dissolving Metal Reductions: Mechanisms of reduction of conjugated system and carbonylcompounds((including Birch, Benkeser, Clemmensen reductions), Bimolecular reductions of esters, Birch reduction, Reduction with hydrazine and its derivatives, Wolf-Kishner reduction, McMurry reaction, Pummer, Willgerdot, Corey-Bakshi-Shibata and Tishchenkoreactions. Reduction with arene sulphonyl derivative of hydrazine, Reaction with diimide andrelated compounds.

UNIT-II: **[15 Hours]**

Oxidation Reactions: Introduction and different oxidative processes, Mechanism ofoxidation reaction with chromium (Jones, Sarett, Collins & PCC), Lead tetra acetate, Oxone, Osmium tetroxide, MnO_2 and manganese salts, peracids and peresters, periodic acid, Ozone, Dess-Martin periodinane, TEMPO, CAN, Swern oxidation and their synthetic importance in functional group transformation.

Halogenation Reactions: Halogenation of olefins and carbonyl compounds, Benzylic andAllylic halogenation, Dehalogenation reactions. Dehydrogenation with S, Se, Pt, Pd, Ni.

UNIT-III **[15 Hours]**

Basic principles and technologies used in disconnection approach. Synthons and synthetic equivalents. Interconversion of functional groups. One group C-X and two group C-X disconnections.

Protecting groups: Principle of protection of hydroxyl, amino, carboxylic and carbonylgroups and their synthetic applications.

Retrosynthetic analysis: Analysis of alcohols, carbonyl compounds, cyclic and acyclicalkanes, benzocaine, p-methoxyacetophenone, acetonecyanohydrin, 2-methyl-6-methoxy-indole-3-acetic acid, 6-methylquinoline & 1-phenyl-4-p-methoxyphenyl-1,3-butadiene, Limonene, Danishefsky's pentalenolactone, Benziodarone, nitrofurazone, Warfarin and Juvabione.

References :

1. Modern Organic Reactions- H.O.House
2. Organic Synthesis- R.E.Ireland (Prentice Hall India) 1969.
3. Art in Organic Synthesis- Anand, Bindra & Ranganath (Wiley) 1970.
4. Organic Synthesis a Disconnection Approach- Stuart
5. Advanced Organic Chemistry, IV ed., Part A & B- Carrey & Sundberg (Kluwer-Academic) 2001.
6. Modern Methods of Organic Synthesis-N. Carruthers (Cambridge University), 1996.
7. Selected Organic Synthesis-Ian Fleming (John Wiley & Sons) 1973.

OC H 552: Medicinal Chemistry

COURSE OUTCOME:

- Students will gain an understanding on the classification and nomenclature of drugs, modern theories of drug action and drug design.
- Students will able to know classification, synthesis and mode of action of antipyretic analgesis drugs, general anesthetics, local anesthetics, cardiovascular drugs, antineoplastic agents and antiviral drugs with suitable examples.
- Students will understand the classification, nomenclature, source and deficiency diseases and biological functions of various vitamins, chemistry of penicillins,cephalosporin C, streptomycin, chlorampthe knowledge of nomenclaturehenicol and tetracyclins.
- Students will acquire knowledge about nomenclature, classification and biological role of prostaglandins, Structural elucidation, stereochemistry and total synthesis of prostaglandins.