P.B.SIDDHARTHA COLLEGE OF ARTS & SCIENCE
DEPARTMENT OF CHEMISTRY
M.Sc – CHEMISTRY (ORGANIC CHEMISTRY)
III SEMESTER

Paper Code & Title: 22CH3E5: Retro Synthetic Analysis

No. of hours per week: 04 **Total credits: 04**
Total marks: 100 **(Internal: 30 M & External: 70M)**

	Course:Retro Synthetic Analysis (code 22CH3E5)	
S.No	COURSE OUTCOMES	PO`s
	The student will be able to	
1	Understand the basic concepts of Retro synthetic analysis	1,7
2	Apply the knowledge of Retro synthetic analysis in designing new synthetic strategies	1,4,6
3	Analyse the approach of Retro synthetic analysis are useful in designing the synthesis.	1,5,7
4	Evaluate whether the synthetic route will result in the desired product or not.	1,5,6,3
5	Memorize the basic concepts related Retro synthetic analysis.	2,7

UNIT-I

Disconnection Approach – Principles : Introduction, Terminology:
Retrosynthesis, Target Molecule (TM), synthon, synthetic equivalent,functional group interconversion (FGI). Linear and convergent synthesis.Criteria for selectionoftarget.OrderofeventsinretrosynthesiswithreferencetoSalbutamol,Proparcaine andDopamine.Chemoselectivity,Regioselectivity,reversalofpolarityandcyclizations.

UNIT-II

C-X disconnections:
one group C-X disconnections (Carbonylderivatives,ethers,sulphidesandalcohols),Two group C-X disconnections (1,1-difunctionalised, 1,2- difunctionalised and 1,3-difunctionalisedcompounds), Control in carbonyl condensations, selective organic transformations: chemoselectivity,regioselectivity, stereoselectivity, enentioselectivity, cyclization reactions,amine synthesis.

UNIT-III

C-C Disconnections One group C-C Disconnections:
Alcohols and carbonyl compounds (1,1-C-C, 1,2-C-Cand 1,3-C-C), Alkene synthesis,use of acetylenes and aliphatic nitro compounds in organic synthesis. Two group C-C Disconnections:Diels-Alder reactions, 1,3difunctionalized compounds and α, β-unsaturated compounds, controlin carbonyl condensations, 1,5 difunctionalized compounds, Michael addition.

UNIT-IV

Protecting Groups :
Protection and deprotection of hydroxyl, carbonyls, amines, carboxylicacids, alkenes and alkynes

UNIT-V

Ring Synthesis Introduction to ring synthesis, saturated heterocycles, synthesis of three, four, five and six membered rings and their fused anologs, Robinsonannelation.

Course outcome: Students opting this course will have through knowledge on retrosynthesis and designing organic synthesis making use of retrosynthetic analysis.

Reference Books:

1. Organicsynthesesviaboranes/HerbertC.Brown;withtechniquesbyGaryW. Kramer,
2. AlanB.Levy,M.MarkMidland.NewYork:Wiley,1975
3. Some Modern Methods of Organic Synthesis W. Carothers, Third Edition, Cambridge University Press, Cambridge, 1988.
4.Organic Synthesis: The disconnection approach, S. Warrant John Wiley & sons, NewYork, 1984.
5. ModernSyntheticReactions,HerbertO.House,SecondEdition,W.A.Benzamine Inc. Menio Park, California, 1972.
6. PrincipleofOrganicSynthesis-R.O.C.NormanandJ.M.Coxon.(ELBS)
7. OrganicSynthesis:Specialtechniques.V.K.AhulwaliaandRenuAggarwal.
8. OrganicSynthesisbyCWillisandMWillis 9. ProblemsonorganicsynthesisbyStuartWarren