22CH4E3: HETERO CYCLIC CHEMISTRY

Course Code	22CH4E3	I A Marks	30
No. of Lecture Hours / Week	4	End Exam Marks	70
Total Number of Lecture Hours	60	Total Marks	100
Seminar	-	Exam Hours	03

Course:HETERO CYCLIC CHEMISTRY		
S.No	COURSE OUTCOMES	PO`S
	The student will be able to	
1	Memorize the synthetic routes and reactions related to three, four, five, six membered and fused heterocyclic compounds.	2,7
2	Understand the concepts of synthesis and reactions of three, four, five, six membered and fused heterocyclic compounds.	1,2,7
3	Apply the conceptual knowledge gained in the synthesis and reactions of organic synthesis three, four, five, six membered and fused heterocyclic compounds as and when required.	1,6,
4	Analyse and categorize the various reactions involved in the synthesis of three, four, five, six membered and fused heterocyclic compounds	1, 7
5	Evaluate the role of heterocyclic compounds in theraupetic and industrial usage	1, 7

Course Learning Objective(S): The main objective of this paper is to give a basic and updated knowledge for the students on Heterocyclic Chemistry.

CO-PO MATRIX								
COURSE CODE 22CH4E2	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO1		H					M
	CO2	M	M					L
	CO3	H					M	
	CO4	H						M
	CO5	H						M

UNIT-I

Definition, Classification and Nomenclature (Hantzsch Widman System) of hetero cycles.
Three membered Heterocyclic Compounds: Synthesis, reactivity, and importance of the following ring systems: Aziridines, Oxiranes, Thiiranes, azirine.

UNIT-II

Four membered Heterocyclic Compounds: Synthesis, reactivity, and importance of the following ring systems :Azitidines, oxetanes, Thietanes.
Fused systems: Synthesis and reactivity of Penicillins G and V.

UNIT-III

Five membered Heterocyclic Compounds with two hetero atoms: Synthesis, reactivity, aromatic character, and importance of the following heterocycles: Pyrazole, Imidazole, Oxazole, Isoxazole, Thiazole.

Fused systems: Synthesis and reactivity of Indoles and Benzimidazoles.

UNIT-IV

Six-membered Heterocyclic Compounds with two hetero atoms: Synthesis, reactivity, aromatic character and importance of the following heterocycles: Pyridazines, Pyrazine, Oxazine, Thiazine.

Fused systems: Acridines and Benzodiazines.

UNIT- V

Larger ring and other Heterocycles: Synthesis and reactivity of Azepines, Oxepines and Thiepines. Synthesis and reactivity of Benzodiazepines.

Reference books:

1. Some Modem Methods of Organic Synthesis W.Caruthers, Cambridge University Press, Cambridge.
2. Organic Synthesis viz Boranes, HerbetC. BrownGray, W.KramerAlanB.Levy and M.MarkMidland JohnWilly&Sons, NewYork.
3. Heterochemistry, T.L.Gilchrist, Longman science and tech.
4. Anintroduction to the Chemistry of Heterocyclic Compounds, R.M.Acheson, Interscience Publishers, NewYork
5. Principle of Organic Chemistry, RocNorman, J.M.Coxon, Nelson Throms
6. Advanced Organic Chemistry, F.ACarey and R.J.Sundberg. Plenum.
7. Heterocyclic chemistry by Jai JackLie, Springer publications.

M.Sc. DEGREE EXAMINATION
FOURTH SEMESTER

22CH4E3 :: Hetero Cyclic Chemistry

Time: 3 hours **Maximum Marks: 70**

SECTION – A **5x4=20M**

Answer all the questions

1) (a) Write any one method of synthesis of Thiirane. (CO-3,L-3)

(OR)

(b) Write any one method of synthesis of azirine. (CO-3,L-3)

2) (a) Discuss the synthesis of oxetane. (CO-2,L-2)

(OR)

(b) Discuss the reactivity of pencillin. (CO-2,L-2)

3) (a)Write down the structures of pyrazole and imidazole and compare. (CO-4,L-4)

(OR)

(b)Compare the structure of Indole & Benzimidazole. (CO-4,L-4)

4) (a) Write one synthesis method of pyrazine. (CO-2,L-2)

(OR)

(b) Discuss the reactivity of Benzodiazine. (CO-2,L-2)

5) (a) Write the synthesis of azepine. (CO-3,L-3)

(OR)

(b) Write the structure of Benzodizepine. (CO-3,L-3)

SECTION – B **(5x10=50M)**

UNIT – I

6) (a) Write the synthesis and reactivity of Aziridines and oxiranes. (CO-2,L-2)

(OR)

(b) Discuss the classifications and nomenclature (Hantzsch Widman system) of heterocycles. (CO-2,L-2)

UNIT – II

7) (a) Write the synthesis and reactivity of Azitidines and Thietanes. (CO-2,L-2)

(OR)

(b) Write the synthesis of Pencillin G and V. (CO-2,L-2)

UNIT – III

8) (a) Write the synthesis and reactivity of Oxazole and Thiazole. (CO-3,L-3)

(OR)

(b) Write the synthesis and reactivity of Indole. (CO-3,L-3)

UNIT - IV

9) (a) Write the synthesis and compare the reactivity of Pyridazines and Oaxazine. (CO-4,L-4)

(OR)

(b) Write the synthesis and compare the reactivity of acridine andpyrazine. (CO-4,L-4)

UNIT - V

10) (a) Evaluate the synthetic routes and reactivity of Oxepines and Thiepines. (CO-5,L-5)

(OR)

(b) Appraise the synthetic routes and reactivity of Benzodiazepines and azepines. (CO-5,L-5)

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