Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Department of Chemistry

Course Type: SEC-I
Course Title: Pesticides and Green Chemistry
Course Code: 101CHE1601
Credits: 02 **Max. Marks: 50** **Lectures: 30 Hrs.**

Learning Objectives:

The course covers the broad objectives as to:

LO 1. To familiarize the students with Classification of pesticides, History of pesticides, innovation of pesticides chemistry.

LO 2. To understand the concept of Insecticides, Manufacturing processes of some pesticides: Lindane (BHC), DDT, Parathion, Phorate

Course Outcomes:

After completion of course the student will be able to-

CO 1. Define concept, Chemical nature of pesticides , History ofpesticides etc.

CO 2.Explain Manufacturing processes of some pesticides: like Lindane (BHC), DDT, Parathion, Phorate.

Unit No.	Title of Unit & Contents	Hrs.
I	**Chemistry of Pesticides**	**12**
	1. Definition, importance & general classification of agrochemicals. Classification of pesticides on chemical nature and according to target species, mode of action. 2. Introduction: History of pesticides, innovation of pesticides chemistry, development of pesticides. 3. Brief introduction to structure, chemical name, physical properties, chemical properties, synthesis, degradation, metabolism, formulations, mode of action, uses, toxicity (acute and chronic toxicity in mammals, birds, aquatic species etc.) & methods of analysis.	
	Unit Outcomes: UO 1. Define various terms and concept related Pesticides. UO 2. Classify Pesticides on the basis of their chemical nature.	
II	**Green Chemistry**	**07**
	1. What is Green Chemistry? Need for Green Chemistry. 2. Goals of Green Chemistry. 3. Limitations/ Obstacles in the pursuit of the goals of Green Chemistry 2. Twelve principles of Green Chemistry with their explanations.	
	Unit Outcomes: UO 1. Identify Green Synthesis. UO 2. Tabulate twelve principles of Green Chemistry.	

V	Practicals (Any Five)	10
	1. Estimation of available chlorine in bleaching powder 2. Determination of bulk density of pesticidal WP/WDG/Dust/SP. 3. Determination of copper from Bordeaux mixture as fungicides by iodometric titration. 4. Estimation of Organophosphorus insecticide residues in soil by visible spectroscopic. 5. Separation and detection of pesticide by thin layer chromatography. 6. Determination of emulsion stability and cold test of pesticide. 7. Synthesis of pesticides/analogs (Any Three) a. Phenyl benzoate. b. Acetanilide	

Learning Resources:

1. A.I. Vogel. Practical Organic Chemistry.
2. D.V. Jahagirdar, Experiments in chemistry.
3. Dr. O.P. Panday, D.N. Bajpai & Dr. S.Giri, Practical Chemistry, Chand & Company, New Delhi.
4. Day & Underwood, Qualitative analysis: A laboratory manual.
5. O.P. Agarwal. Advanced Practical Organic chemistry.
6. N.K. Vishnoi. Advanced Practical Organic Chemistry.
7. A.I. Vogel. Vogels Qualitative Analysis.
8. A.I. Vogel. Vogels Quantitative Analysis.
9. J.N. Gurutu & R. kapoor. Advanced Experimental Chemistry Vol I, II, III.
10. Balwantraisatuja. Practical Chemistry, Physical-Inorganic-Organic & Viva Voce.