

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

Paper Code & Title: 22CH3E6: ENVIRONMENTAL CHEMISTRY AND ANALYSIS

No. of hours per week: 04
Total marks: 100

Total credits: 04
(Internal: 30 M & External: 70M)

Course: ENVIRONMENTAL CHEMISTRY AND ANALYSIS (code 22CH3E6)		
S.No	COURSE OUTCOMES	PO'S
	The student will be able to	
1	Memorize the concepts of environmental and its analysis.	1,3
2	Understand the basic significance of segments of environment and soil erosion, soil fertility as well as soil analysis	1,2,4
3	Apply the knowledge of environmental chemistry in addressing the present environmental conditions.	1,2,6
4	Analyse different problems related to environmental issues.	2,4,7
5	Evaluate that how far the existing solutions related to environmental issues can be useful to overcome the novel problems of environment.	1,6,4

UNIT-I

Significance of basic segments of Environment-Nomenclature in the study of Environmental Chemistry., SOIL CHEMISTRY & POLLUTION STUDIES:Principles of weathering-effect of temperature, water, air, plants and animals on weathering., Soil formation/development-factors affecting soil development-physical properties of soil; soil colloids-ion exchange properties.,Soil fertility, productivity- Soil nutrients-micro and macro.

UNIT- II

STUDY OF WATER POLLUTION AND MONITORING AND TREATMENT METHODS OF WATER POLLUTANTS: Hydrosphere-water resources-hydrological cycle-unique properties of water- water quality parameters., Pollution from Domestic water ,industrial, agricultural, solid waste, shipping, radioactive waste & thermal pollution , Effect of specific pollutants like mercury, lead, arsenic, selenium, nitrates, oil.,

Unit- III

Effects of soaps, detergents, pesticides, hydrocarbon with regard to water pollution: Techniques of water treatment-Primary, secondary and tertiary methods-use of coagulants-flash distillation-solar stills, ion exchange reverse osmosis, electro dialysis.

UNIT -IV

STUDY OF AIR POLLUTION AND MONITORING AND TREATMENT METHODS IN CASE OF AIR POLLUTION: Atmospheric sources and emission of air pollutants-carbon monoxide-sulphur ,oxides-oxides of nitrogen,organic pollutants and photo chemical smog-particulates-acid rain and radioactive substances. Continuous monitoring of air pollutants-Principles,Monitoring instruments,monitoring of sulphurdioxide,hydrogensulphide,oxides of nitrogen, oxides of carbon, hydrocarbons, ozone and suspended particulate matter and radioactive substances.

UNIT-V

ENVIRONMENTAL CHEMICAL ANALYSIS: Analysis of soil:Sampling,determination of moisture,total nitrogen, phosphorus, silicon, lime, humus, nitrogen, alkali salts., Analysis of water samples : Dissolved oxygen,Chemical oxygen demand ,Biological oxygen demand,Phosphates,nitrogen compounds.analysis of metallic constituents, Analysis of Air samples:

carbon mono oxide,carbondioxide,sulphurdioxide,hydrogensulfide,oxides of nitrogen,ammonia,ozone, hydrocarbons and aromatic hydrocarbons.,

SUGGESTED BOOKS:

- 1.EnvironmentalChemsitry by A.K.De, Wiley Eastern Limited, New Delhi
- 2.A Text Book of Environmental Chemistry by O.D.Tyagia and M.Mehra-AnmolPublicaitons,
- 3.Environmental Pollution Control and Engineering by C.S.Rao , Wiley Eastern Limited,
- 4.Environmental Chemistry by P.S.Sindhu,-New Age International Publishers
- 5.A Text Book of Environmental Chemistry and Poolution Control by S.S.Dara ,S.Chand& Co
- 6.Environmental Pollution Analysis by S.M.Khopkar, Wiley Eastern Limited, New Delhi
- 7.AanalyticalAgricultrual Chemistry by S.L.Chopra&J.S.Kanwar -- Kalyani Publishers
- 8.Mannual of soil, plant, water and fertilizer analysis, R.M.Upadhyay and N.L 5harma, Kalyani Publishers, New Delhi
- 9.Environmental Chemistry by B.K.Sharma- Goel Publishing House, Meerut.
- 10.Soil Chemical Analysis by M.L.Jsackson,Prentice-Hall India Pvt Ltd, New Delhi