P.R.GOVERNMENT COLLEGE (AUTONOMOUS)-KAKINADA
THIRD YEAR 2019-20

SEMESTER-VI

ELECTIVE PAPER – VII-(B): ENVIRONMENTAL CHEMISTRY

45 hrs (3 h / w)

UNIT-I

Introduction **9h**

Concept of Environmental chemistry-Scope and importance of environment in now adays – Nomenclature of environmental chemistry – Segments of environment - Natural resources – Renewable Resources – Solar and biomass energy and Nonrenewable resources – Thermal power and atomic energy – Reactions of atmospheric oxygen and Hydrological cycle.

UNIT-II

Air Pollution **9h**

Definition – Sources of air pollution – Classification of air pollution – Acid rain – Photochemical smog – Greenhouse effect – Formation and depletion of ozone – Bhopal gas disaster – Controlling methods of air pollution.

UNIT-III

Water pollution **9h**

Unique physical and chemical properties of water – water quality and criteria for finding of water quality – Dissolved oxygen – BOD, COD, Suspended solids, total dissolved solids, alkalinity – Hardness of water – Methods to convert temporary hard water into soft water – Methods to convert permanent hard water into soft water – eutrophication and its effects – principal wastage treatment – Industrial waste water treatment.

UNIT-IV

Chemical Toxicology **9h**

Toxic chemicals in the environment – effects of toxic chemicals – cyanide and its toxic effects – pesticides and its biochemical effects – toxicity of lead, mercury, arsenic and cadmium.

UNIT-V

Ecosystem and biodiversity **9h**

Ecosystem

Concepts – structure – Functions and types of ecosystem – Abiotic and biotic components – Energy flow and Energy dynamics of ecosystem – Food chains – Food web – Tropic levels – Biogeochemical cycles (carbon, nitrogen and phosphorus)

Biodiversity

Definition – level and types of biodiversity – concept - significance – magnitude and distribution of biodiversity – trends - biogeographically classification of India – biodiversity at national, global and regional level.

List of Reference books

1. Fundamentals of ecology by M.C.Dash
2. A Text book of Environmental chemistry by W. Moore and F.A. Moore
3. Environmental Chemistry by Samir k. Banerji

P. R. GOVERNMENT COLLEGE, KAKINADA
SEMESTER – VI (CHEMISTRY)
Paper –VII B: ELECTIVE – B: ENVIRONMENTAL CHEMISTRY

Weightage to content

S. No.	Course Content	Essay Questions (10M)	Short Answer Questions (5M)	Total No. Of Questions from each Unit	Total No. of Marks allotted to each Unit
1	**Unit -I**	**2**	**2**	**4**	**30**
2	**Unit –II**	2	2	4	30
3	**Unit –III**	2	1	3	25
4	**Unit –IV**	1	1	2	15
5	**Unit -V**	**2**	**2**	**4**	**30**
	TOTAL	**9**	**8**	**17**	**130**

P. R. GOVERNMENT COLLEGE, KAKINADA
MODEL PAPER FOR SEMESTER – VI (CHEMISTRY)
Paper –VII B: ELECTIVE – B: ENVIRONMENTAL CHEMISTRY

Duration: 2.30 hrs. **Max. Marks: 60**

Answer any **FOUR** questions choosing **AT LEAST ONE** question from each section **4X10=40Marks**

Section-I

1. Explain the segments of the environment
2. Write about renewable energy sources.
3. What are the toxic effects of cyanide on the environment?

Section-II

4. Discuss in detail about air pollution.
5. Describe the Greenhouse effect.
6. What are the quality parameters of water?

Section-III

7. Give the methods to convert permanent hard water to soft water.
8. Describe the types of ecosystem.
9. Give detailed account on biodiversity.

Section-IV

Answer any **FOUR** questions. Each question carries **FIVE** marks. **4X5=20Marks**

10. Explain the importance of environment in now-a-days.
11. Write about hydrological cycle.
12. Short note on acid rains.
13. What is Bhopal gas disaster?
14. Give about the hardness of water.
15. Explain the toxicity of mercury.
16. What are the functions of eco system?
17. Discuss briefly about food chain.

LABORATORY COURSE – VI

Practical Paper – Elective VII B (at the end of semester VI) **30 hrs (2 h / W)**

1. Determination of carbonate and bicarbonate in water samples
2. Determination of hardness of water using EDTA
   a) Permanent hardness
   b) Temporary hardness
3. Determination of Acidity of water samples
4. Determination of Alkalinity of water samples
5. Determination of chlorides present in water samples

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SEMESTER – VI (CHEMISTRY)
Paper –VII B: ELECTIVE – B: ENVIRONMENTAL CHEMISTRY

Question bank

Essay questions

1. Explain different segments of environment.
2. Explain different renewable and non-renewable energy resources.
3. Write different source of air pollution and explain the effects of air pollution
4. What is acid rain how is it formed write equations ? what are its effects?
5. Explain formation and depletion of ozone layer. write the effects of ozone depletion.
6. What are the causes of temporary hardness write the methods to temporary hard water into soft water.
7. What are the causes of permanent hardness write the methods to permanent hard water into soft water.
8. Explain any four water quality parameters.
9. Explain the toxic effects of lead ,mercury and arsenic.
10. Write the types and functions of eco system.
11. Explain carbon and nitrogen cycles.
12. Explain bio diversity at regional, national and global level.

Short answer

1. Explain the terms with examples
   a) Pollutant b) contaminant
2. Explain the terms with examples
   a) Receptor
   b) sink
3. Reaction of atmospheric oxygen
4. Explain green house effect.
5. Explain Bhopal gas disaster.
6. What is utrophication write its effects.
7. Write the toxic effect of cyanides.
8. Write bio chemical effects of pesticides.
9. Explain food chain.
10. Explain biodiversity and write different types of biodiversity.
11. Write about significance of bio diversity.
12. Explain any two control methods of air pollutions.