

30. How can metallic character change across a period?
 31. Describe clearly the link between increasing effective nuclear charge across a period and the changes in van der Waals radius.

SECTION D

Each question carries 15 marks (essay type) Answer any two questions.

32. a. Explain about the pH changes of aqueous solutions of elements in the third period as the period is crossed.
 b. Explain how these changes are directly related to the changes in effective nuclear charge across the period.
 c. Describe the metallic character of elements in a period. (5x3 marks)
33. a. Explain the role of some chemicals in household items. (8 marks)
 b. Write a short note on food adulteration. (7 marks)
34. a. Write a short note on the uses and hazards of fertilisers. (8 marks)
 b. Draw the structure of carbon and sodium (shell model) (7 marks)
35. a. Draw the structures showing shapes of methane, water and carbon dioxide (8 marks)
- b. compare the bonding structures of diamond – graphite. (7marks)

UNIVERSITY OF KERALA OPEN COURSE FOR OTHER MAJORS

2020 Admission onwards

Semester	V
Course	Open Course
Course name	ENVIRONMENTAL CHEMISTRY
Course Code	CH 1551.3
Credit	2
Hours	54 hours
Lecture-Tutorial-Lab	2-0-0

CO No.	COURSE OUTCOME <i>Upon completion of this course, students</i>	Cognitive Level	PSO No.
1	Discuss the structure and composition of the atmosphere	U	PSO14
2	Identify, Realise and enlist the causes of pollution to water, soil and air	U	PSO14
3	Become aware of environmental issues and its effect to man and other living beings	U	PSO12
4	Review major environmental disasters and suggest controlling and preventive measures	U	PSO12
5	Discuss the laws of environmental protection	U	PSO21

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	Environmental Components Structure and composition of the, Atmosphere, hydrosphere, biosphere and Lithosphere – composition of atmosphere	9	1,2,3
2	Water pollution Sources, its effect and control; Sampling and measurement of water quality and their analysis, water quality standards, BOD and COD Hard water – soft water Eutrophication and restoration of lakes.	9	1,2,3
3	Air Pollution Types and sources of air pollution, Common Air Pollutants - Effects of air pollution; Smog – ozone layer depletion green house effect – acid rain	9	1,2,3
4	Soil Pollution Sources, types, effects and control of: Land pollution, Marine pollution, Thermal Pollution and Radioactive pollution. Waste separation, storage and disposal ; Waste Reduction, Recycling and Recovery of materials. Plastics and their misuses.	9	1,2,3
5	Major environmental disasters Major environmental disasters - mercury poisoning in Minamata, Japan, Itaiitai disease due to cadmium poisoning in Japan - Love Canal toxic waste site, Seveso disaster chemical plant explosion - Bhopal disaster - Chernobyl incident	9	4
6	Major environmental laws: Environment (Protection Act) – The Air (Prevention and control of pollution) Act – The water (Prevention and control of pollution) Act – The wild life protection Act – Forest conservation Act – The Ozone Depleting Substances (Regulation and Control) Rules – The Plastic Waste (Management and Handling) Rules - Rio declaration- Montreal protocol, Kyoto protocol Introduction to Green chemistry (elementary ideas only)	9	5

Reference

1. Banerji, K Sameer “Environmental Chemistry”, ISBN - 9788120315761.
2. K. De “Environmental Chemistry - An introduction” New Age International (P)Ltd.,2017
3. B. K. Sharma “Air Pollution”, Goel Publishing House
4. V. K. Ahluwalia “Environmental Chemistry”, books.google.co.in, 2017
5. G.W. vanLoon and S. J. Duffy “Environmental Chemistry: A Global Perspective”
6. S.K.Mohanty, Environment and Pollution Laws, Universal Law Publishing Co. (P)Ltd