

**AR-2513**

**M. Sc. (Third Semester) Examination,  
Nov.-Dec. 2017**

**CHEMISTRY**

*Paper : Third*

**(Environmental Chemistry)**

*Time Allowed : Three hours*

*Maximum Marks : 40*

*Note : Attempt questions of all two sections as directed.  
Distribution of marks is given with sections.*

**Section-A**

**(Short Answer Type Questions) 3×5=15**

1. Biogeo chemical cycles of O and S.

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**PTO**

**[ 2 ]**

**Or**

Thermodynamic derivation of lapse rate and temperature inversion.

2. Climate changes and its consequences.

**Or**

Gas phase atmospheric oxidation reactions of acid rain precursors.

3. Write a note on Redox chemistry in natural waters.

**Or**

Biochemical oxygen demand and methods of determination.

4. Biochemical and damaging effects of As and Cd.

**Or**

Sources and toxicity of Mercury and lead.

5. Discuss the following :

- (i) Bhopal gas tragedy and its impacts  
(ii) London smog and its effects

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- (iii) Minimata disease  
(iv) Soil composition and macro-micro-nutrients

## Section-B

(Long Answer Type Questions) 5×5=25

6. Discuss the major chloro-fluorocarbons and other halogen compounds and their chemistry in atmosphere.

Or

Discuss the formation of ozone / hydroxy, hydroperoxy and hydrogen peroxide.

7. Give an account of aerosols under the heads of sources, size, distribution and effect on visibility.

Or

Give detailed description of Antarctic ozone hole and the role of chemistry in the control strategies.

8. Give a detailed account on the sources of water pollution.

Or

Give a detailed account on the aerobic and anaerobic

reactions of organic sulphur and nitrogen compounds in fresh water.

9. What are pesticides? Discuss their classification.

Or

Discuss the properties and uses of organochlorine insecticides with special reference to DDT and BHC.

10. Write a detailed account of pollution of soil by fertilizers, plastics and metals.

Or

Write a detailed note on methods for soil re-mediation.

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