

4363

4

6. (a) Evaluate the importance of thermodynamics in environmental energy transfer. (10)
- (b) What is the Nernst equation and its relevance in environmental electrochemistry? (5)
7. Discuss the role of heavy metals in water chemistry and their environmental implications. (15)
8. Critically assess the environmental effects of synthetic polymers and xenobiotic compounds. (15)

(200)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4363

G

Unique Paper Code : 32181102

Name of the Paper : Physics and Chemistry of Environment

Name of the Course : **B.Sc. (H) Environmental Sciences-Core**

Semester : I

Duration : 3 Hours

Maximum Marks : 75

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions.
3. **All** questions carry equal marks.

1. (a) Write the definition of the following (**Any five**) :  
(2×5=10)

(i) Kirchoff's law in environmental physics

(ii) Gaussian plume model

P.T.O.

4363

2

- (iii) Ionization potential of elements
- (iv) Redox reactions and their environmental significance
- (v) Photochemical smog
- (vi) Cation exchange reactions in soil

(b) Fill in the blanks : (1×5=5)

- (i) The concept of \_\_\_\_\_ is crucial in understanding the movement of light and matter in environmental physics.
- (ii) \_\_\_\_\_ is a key parameter in the calculation of pollutants' dispersal in the environment.
- (iii) In environmental chemistry, \_\_\_\_\_ measures the tendency of an atom to attract electrons.
- (iv) The formation of \_\_\_\_\_ is a critical factor in understanding atmospheric chemistry.
- (v) Soil humus is important for maintaining \_\_\_\_\_ in soil composition.

4363

3

2. Write short notes on the following : (5×3=15)

- (i) Principles and applications of photovoltaic and solar cells
- (ii) Molarity and normality in environmental chemical analysis
- (iii) Chemical and physical properties of water relevant to the environment

3. Write down the difference between the following : (5×3=15)

- (i) Ionic and covalent bonds
- (ii) Dry and moist adiabatic lapse rates
- (iii) Sulfur smog and photochemical smog

4. Discuss the significance of Beer-Lambert law in environmental studies. (15)

5. (a) Explain the role of electronic configuration in the periodic properties of elements. (8)

(b) Analyze the impact of free radicals on ozone layer depletion. (7)

P.T.O.