

6. Recently, many studies suggested that the Indo-Gangetic plain has some of the most polluted air quality which is many times above the WHO guidelines. Using appropriate chemical reactions, explain the changes that occur in the atmospheric chemistry with the amplification of air pollutants in the region. Also, explain ways to combat this environmental issue by citing appropriate examples. (15)

15/1/25 (M)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1396

I

Unique Paper Code : 2182011103

Name of the Paper : Environmental Chemistry  
(DSCC-3)Name of the Course : B.Sc. Hons. Environmental  
Sciences - Core

Semester : I

Duration : 2 Hours

Maximum Marks : 60

**Instructions for Candidates**

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

1. (a) Define the following : (2×5)

(i) Ionization Potential

(ii) Sulphur Smog

(iii) Solubility products

(iv) Electrochemical cells

(v) Organic carbon

(b) Fill in the blanks : (1×5)

(i) Minamata disease is a neurological disease caused by severe poisoning of .....

(ii) If Dissolved Oxygen levels drop below ..... mg/l, the aquatic life present experiences extreme stress.

(iii) .....gas is the major contributor to photochemical smog.

(iv) Permanent hardness of water is caused by the presence of ..... and ..... of calcium and magnesium.

(v) Dark organic matter in soil that is formed by the decomposition of plant and animal matter is called as .....

2. Write explanatory notes on the following (**any three**): (5×3)

(i) Chelation

(ii) pH and pE

(iii) Chemistry of acid rain

(iv) Organic and Inorganic components of Soil

3. (a) What is soil organic carbon and its composition? How is it different from soil organic matter? (7)

(b) What are redox reactions? Explain different types of redox reactions with appropriate examples. (8)

4. (a) Explain the various chemical and physical properties of water. (8)

(b) What is the difference between aromatic and aliphatic compounds? Give three examples of each compound with their respective molecular structure. (7)

5. (a) What are phenolic compounds? How do these compounds affect soil properties? (7)

(b) What is it called when some form of water leaves soap scum behind or calcium deposits on appliances. What is the reason for this chemical change in water and how can it be removed? (8)