

## SYLLABUS FOR CERTIFICATE COURSE

IN

## ENVIRONMENTAL CHEMISTRY

### 1. Introduction:

Concept and scope of Environmental Chemistry, Definition of Environment and Environmental Chemistry, Terminology - Pollution, Pollutant, Contaminant, Receptor, Sink, Pathways of a pollutant, Dissolved Oxygen (DO), Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), Threshold Limit Value (TLV).

### 2. Environmental Segments:

Atmosphere, Hydrosphere, Lithosphere -Structure of soil profile, Biosphere. Composition of Atmosphere, Atmospheric Structure-major regions(Troposphere,Stratosphere, Mesosphere and Thermosphere) of the atmosphere with temperature profile.

### 3. Green House Effect (Global Warming):

What is Green House Effect; How the Green House Effect is produced, Major sources of Green House gases, Consequences of Green House Effect. Measures to prevent Global Warming.

### 4. Chloro Fluoro Carbons (CFCs) :

What are Chloro Fluoro Carbons cause of Ozone layer depletion, Mechanism of Ozone Layer depletion by CFCs, Consequences of Ozone Layer depletion.

### 5. Air Pollution:

Air pollutants- Acid rain, how acid rain is formed, what are the adverse effects of acid rain. What is Photochemical smog, how Peroxy acetyl nitrate (PAN) is formed. What is the role of Tetra Ethyl Lead (TEL) in petrol?

### 6. Water Pollution:

Classification of water pollutants, Organic pollutants- Oxygen demanding waste, Disease causing waste, Synthetic Organic Compounds, Sewage and agricultural run-off, Oil. Inorganic pollutants- Radioactive materials, Heat. Eutrophication and its consequences. Bio-amplification.

### 7. Chemical Toxicology:

Toxic Chemicals in Environment, Biochemical effects of Arsenic, Lead and Mercury, Impact of toxic chemicals on Enzymes. Biochemical effects of ozone and PAN, Biochemical effects of pesticides.

## Certificate Course in Environmental Chemistry

### Model paper

Time: 3 hrs

Max Marks: 50

#### Section-A

Answer any two of the following

2 X 15 = 30

1. How is atmosphere divided? Discuss the characteristics of the major regions with temperature profile
2. What is water pollution? How water pollutants are classified? Discuss various pollutants in detail
3. What is Air pollution? Explain the mechanism of depletion of Ozone layer by CFCs and what are its consequences.

#### Section- B

Answer any five of the following

5 X 4 = 20

4. What is Acid rain? What are its adverse effects?
5. What is BOD and COD?
6. Draw the soil profile
7. What is Green House Effect? What are its consequences
8. What is Eutrophication?
9. Give the composition of Air
10. Explain Bio- amplification
11. Define the term Sinks and TLV