

**M.Sc. DEGREE I SEMESTER EXAMINATION IN ENVIRONMENTAL TECHNOLOGY,  
NOVEMBER 2009**

**ENV/ENB 2102 CHEMISTRY OF THE ENVIRONMENT**

Time: 3 Hours

Maximum Marks : 50

**PART - A**

(Answer ANY FIVE questions)  
(Each question carries TWO marks)

(5 x 2 = 10)

- I. (a) How is ozone formed in the stratosphere? What is its importance?  
 (b) COD is usually higher than BOD. Why?  
 (c) Explain hydrological cycle  
 (d) What is the importance of symbiotic and denitrifying bacteria in nitrogen cycle?  
 (e) Explain how synthetic detergents cause water pollution.  
 (f) Distinguish between nephelometry and turbidimetry.

**PART - B**

(Answer ANY FIVE questions)  
(Each question carries THREE marks)

(5 x 3 = 15)

- II. (a) What is acid rain? Explain its causes and consequences.  
 (b) Discuss the unique properties of water and their environmental significance.  
 (c) Explain the biogeochemical cycle of sulphur in the environment.  
 (d) How does synthetic detergents contribute to water pollution?  
 (e) Describe a method for the determination of total metal concentration in soil.  
 (f) How will you determine the DO of a body of water? Mention the chemical reactions involved.

**PART - C**

(Answer ANY FIVE questions)  
(Each question carries FIVE marks)

(5 x 5 = 25)

- III. (a) Discuss the important sources, chemical reactions and health effects of air pollution due to carbon monoxide and sulphur dioxide.  
 (b) Explain the carbonate-bicarbonate equilibrium and variation in pH of an aquatic system resulting from the dissolution of carbon dioxide in water.  
 (c) Discuss the sources, nature and fate of organic pollutants in soil.  
 (d) Explain the principle and applications of any two of the following methods.  
     (i) Atomic Absorption Spectrophotometry  
     (ii) Gas chromatography  
     (iii) Electrophoresis  
 (e) Write notes on :  
     (i) Radio nuclides in water  
     (ii) Cation exchange capacity of soils  
 (f) Explain the analytical methods for monitoring nitrogen oxides and H<sub>2</sub>S in air.