

**B.Tech. (Sem.II) (Main/Back) Examination - 2014**  
**204 Chemistry & Environmental Engineering**

[Time : 3 Hours]

[Total Marks : 80]  
 [Min. Passing Marks : 24]

**Instructions to Candidates :**

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

**Unit - I**

1. (a) Explain temporary and permanent hardness of water. (5)
- (b) Discuss various units used to express hardness and their relationship. (5)
- (c) A standard hard water contains 15 gm of CaCO<sub>3</sub> per litre, 20 ml of this required 25 ml of EDTA solution, 100 ml of sample water required 18 ml of EDTA solution. The sample after boiling required 12ml of EDTA solution. Calculate the temporary, permanent and total hardness of sample water. (6)

OR

1. (a) What are the characteristics of drinking water. Explain various steps involved in removing suspended impurities from the water. (6)
- (b) Write short notes on the following :
  - (i) Role of Eriochrome Black-T indicator in EDTA titration.
  - (ii) Break point chlorination
  - (iii) Clark's method of hardness determination (5+5)

**Unit - II**

2. Explain Demineralization process of water softening with diagram. (16)
- OR
2. (a) Write short notes on any two of the following :
    - (i) Scale and sludge formation
    - (ii) Priming and Foaming
    - (iii) Reactions involved in Lime-soda method (8+8)

**Unit - III**

3. (a) What is Ecosystem. Discuss various components and functions of ecosystem. (10)
  - (b) What are renewable and non-renewable resources of energy. (6)
- OR
3. (a) What is biodiversity? What are the basic laws of biodiversity? Describe the population characteristics analysis in ecology. (10)
  - (b) Discuss the advantages and limitations of Environmental Impact Assessment (EIA). (6)

**Unit - IV**

4. (a) What is air pollution? Explain harmful effects of air pollution and control of air pollution. (10)
  - (b) Explain disposal methods of solid waste. (6)
- OR
4. Write short notes on any two of the following :
    - (i) Global Warming, its causes and its consequences
    - (ii) On site sanitation
    - (iii) Economic recovery of solid waste
    - (iv) Ozone depletion its effect and control (8+8)

**Unit - V**

5. (a) Briefly explain the collection, conveyance, treatment and disposal of waste water. (8)
  - (b) What is water pollution? Explain its causes, effect and control. (8)
- OR
5. (a) Define corrosion? Explain its significance and different types of protections. (10)
  - (b) Write short notes on any two the following :
    - (i) Galvanic corrosion.
    - (ii) Stress corrosion.
    - (iii) Pitting corrosion