

**2E2004****2E2004****B.Tech. I Year II Sem. Main / Back June-July Examination, 2015****204 Chemistry and Environmental Engg.**

Time: 3 hours

Maximum Marks: 80

Min. Passing Marks: 26

**Note:** 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.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205).

1. NIL2. NIL

## UNIT-I

Q. 1 (a) Explain temporary and permanent hardness of water. Discuss various chemical methods of disinfection of water. 8

(b) Explain EDTA method for determination of hardness of water. 8

OR

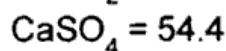
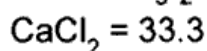
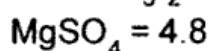
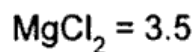
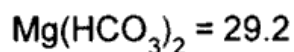
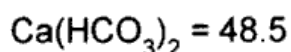
Q. 1 (a) Discuss Clark's method for determining the Hardness of water. 8

(b) What are the requirements of drinking water? How is turbid water clarified on a large scale? Explain the principle involved. 8

## UNIT-II

Q. 2 (a) Describe lime-soda process for water softening. Give the chemical reaction involved during the softening. 8

(b) A sample of water on analysis has been found to contain the following impurities in ppm.



Calculate the quantity of lime and soda required for softening of one million litres of water. 8

OR

- Q. 2 (a) Explain scale formation and Caustic Embrittlement in boilers.  
(b) Calculate the amount of lime and soda required for softening 10,000 litres of water which analysed as follows:

Analysis for raw water

$\text{Ca}^{+2} = 380 \text{ ppm}$

$\text{Mg}^{+2} = 144 \text{ ppm}$

$\text{HCO}_3^- = 1500 \text{ ppm}$

Dissolved  $\text{CO}_2 = 120 \text{ ppm}$

$\text{FeSO}_4 \cdot 7\text{H}_2\text{O} = 278 \text{ ppm}$

Analysis of treated water

$\text{OH}^- = 36 \text{ ppm}$

$\text{CO}_3^{2-} = 32 \text{ ppm}$

UNIT-III

- Q. 3 (a) Define the term pollution, pollutants and contaminants, particulates, primary and secondary pollutants.  
(b) Give Environmental Acts and Regulations in India

OR

- Q. 3 (a) Define EIA. Explain Methodology of Environmental Impact Assessment (EIA).  
(b) What are the major sources of Renewable Energy in India? Explain solar energy.

UNIT-IV

- Q. 4 (a) What is Noise pollution? What are its major sources? What are the adverse effects of noise pollution? How can noise pollution be minimized?  
(b) Discuss Acid Rain and Green House Effect.

OR

- Q. 4 (a) What is air pollution? What are its major sources? What are the Adverse Effects of Air Pollution? How can Air Pollution be minimized?  
(b) Discuss the mechanism of depletion of ozone layer. What are the harmful effects due to the formation of 'ozone hole'? Discuss the substitutes of chlorofluorocarbon (CFCs).

UNIT-V

- Q. 5 What is Corrosion? Discuss the mechanism of Electrochemical Corrosion. Explain sacrificial anodic protection method to minimize corrosion. 1

OR

- Q. 5 What is water pollution and how is it caused? How can water pollution be minimized? Explain methodology of waste water treatment. 1

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