

**MODEL QUESTION PAPER**

**FIFTH SEMESTER B.TECH (CIVIL) ENGINEERING DEGREE EXAMINATION 2015**

**SUBJECT: ENVIRONMENTAL ENGINEERING I**

**Time: 3 Hours**

**Max marks: 100**

**Make suitable assumptions wherever necessary**

**Answer all questions from Part A**

**PART A**

1. Give a short note on the principle of plain sedimentation
2. What is the significance of fluorides, if present in drinking water
3. Draw a neat sketch of the layout of a conventional water treatment plant
4. List the different methods of chlorination
5. Explain the lime soda process for treating hard water

(5x4=20)

**PART B**

**Answer any one full question from each module**

**MODULE I**

6. a. Derive the Stokes' equation of settling of particles in a sedimentation tank (10)  
b. Determine the settling velocity of a particle having diameter 0.06 mm in water.  
Assume specific gravity of particles=2.65, kinematic viscosity of water=1.007 centistokes (10)

**OR**

7. Design a clariflocculator for supplying 10 Mld of water for a city. (20)

**MODULE II**

8. Design a rapid sand filter for a water requirement of 6 Mld. (20)

**OR**

9. Discuss the different layouts adopted for a distribution system with neat sketches (20)

### MODULE III

10. The population for the past three decades as per the census reports of a city is given below. Determine the expected population for the year 2021 by
- Arithmetical increase method
  - Geometrical increase method
  - Decreasing rate of growth method

Census year	1951	1961	1971	1981	1991
Population in thousands	40	100	120	185	210

(20)

**OR**

11. a. Explain Hardy Cross method used for pipe network analysis in water distribution systems (10)
- b. State the different assumptions done in analysis of pipe networks. (10)

### MODULE IV

12. a. Explain the phenomena of adsorption (10)
- b. Discuss the breakthrough curve of adsorption (10)

**OR**

13. Explain the different methods that can be used for removal of dissolved solids in water with neat sketches (20)