

Q.P. Code : 576500

(3 Hours)

[ Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.  
 (2) Attempt any **four** from the remaining **six** questions.  
 (3) Draw suitable **figures** whenever necessary.  
 (4) Handwriting should be legible.

1. Answer any **four**.

- (a) What is ecology? Explain important ecosystems.  
 (b) Explain different types of pollution and its effects on human health.  
 (c) Draw a flow diagram of water treatment plant showing all units.  
 (d) Explain different sources of water?  
 (e) Write a short note on Tube settler.

2. (a) What is an intake structure? Explain River intake with a diagram 10  
 (b) Explain different types of tests conducted to analyze quality of water. 10

3. (a) Explain the different types of impurities present in water. 8  
 (b) What is aeration? What are the different methods of aeration. 6  
 (c) A rectangular tank with length of 15m, width of 6m and depth 3 m is to treat 2.4 MLD. Calculate detention period of the tank, Average velocity through tank and Surface overflow rate. 6

4. (a) Explain the principle of coagulation. What are the advantages and disadvantages of using alum as a coagulant. 8  
 (b) What is flocculation? What are the factors which affect its efficiency. 6  
 (c) Compare Slow sand filter and Rapid sand filter. 6

5. (a) Explain the process of back washing. Also explain Negative head. 8  
 (b) Explain break point chlorination with a diagram? 6  
 (c) Explain pressure filter 6

6. (A) Explain different forms of chlorination. What are the requirements of a good disinfectant. 8  
 (b) What is leachate. How it is controlled? 6  
 (c) Discuss the various factors affecting the per capita demand 6

7. Write short notes on : 20  
 (a) Food chain and food web  
 (b) hazardous wastes  
 (c) 3 'R's of solid waste management  
 (d) Water softening