

Second Semester M. E. (Civil) Environmental Engg. Examination

ADVANCE WATER TREATMENT

Paper – 2 SCEE 2

P. Pages : 3

Time : Three Hours }

[Max. Marks : 80

- Note :** (1) Separate answer book must be used for each Section in the subject Geology, Engineering material of civil branch and Separate answer book must be used for Section A and B in Pharmacy and Cosmetic Tech.
- (2) Answer **three** questions from Section A and **three** questions from Section B.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.

SECTION A

1. (a) Write a note on common impurities found in water. 6
- (b) Explain with neat sketch the thermal stratification. 7
2. (a) Why algae control is necessary in an impounded reservoir ? Discuss the various methods to control the same. 7
- (b) Explain :—
 - (i) Limnology
 - (ii) Water Ecology. 6
3. (a) Write a note on variation in rate of demand. Explain clearly how you take into account these variations in the design of various units. 7
- (b) What is meant by design period ? Discuss the design periods for project components. 6

4. (a) What is meant by unit operation ? What are the important unit operations employed in water treatment ? 6
- (b) Differentiate gravity and pumping system. 7
5. (a) Determine circular settling tank for a flow of 8 MLD. Assume suitable data. 7
- (b) Explain in brief :—
- (i) Zeta potential
- (ii) Design of mechanical flocculator. 7

SECTION B

6. (a) Explain construction and working of slow sand filter. 6
- (b) Design five slow sand filter beds for below data :—
- (i) Population = 60000 person
- (ii) Per capita demand = 150 Lit / head / day
- (iii) Rate of filtration = 190 Lit / hr / sqm.
- Take max. demand as 1.8 times average daily demand. Consider one unit out of five as stand by unit. 7
7. Design rapid sand filter for total filtered water requirement of 5 MLD. Assume any suitable data required. Draw a neat sketch for design filter. 14
8. (a) Explain the principles of disinfection. What are the factors affecting disinfection ? 7
- (b) Explain various types of aerators. 6

9. (a) Explain about reuse of water and conservation of water in industry. 6
(b) What is meant by adsorption ? Explain the method of removal of taste and odour by adsorption. 7
10. Explain :—
- (i) Dual media filter.
 - (ii) Diatomaceous earth filter.
 - (iii) Corrosion control.
 - (iv) Softening of water. 14



