Total No. of Questions : 12]

SEAT No. :

P3755

[Total No. of Pages : 3

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T.E. (Civil)

ENVIRONMENTAL ENGINEERING - I

(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates :-

1) ***Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from Section I and Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from Section II.***
2) ***Answers to the two sections should be written in separate book.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Estimate forecast population at the end of the year 2041 by geometrical increase method with the help of following data. **[6]**

Year	1971	1981	1991	2001	2011
Population	42,000	54,000	61,000	75,000	89,000

b) Draw a component. Flow diagram of a public water supply scheme and explain each. **[6]**

c) Explain the factors affecting the rate of demand. **[6]**

OR

Q2) a) Explain with a neat sketch river intake and lake intake. **[6]**

b) Write down the Indian standards for the quality of potable water for **[6]**

i) pH ii) Hardness

iii) Sulphates iv) Iron

v) Turbidity vi) Colour

P.T.O.

c) Write a procedure for the determination of pH and alkalinity. **[6]**

Q3) a) A water treatment plant treats 300 m^3/hr of water. Work out the following with respect of flocculator: **[8]**

i) Dimensions of flocculator unit

ii) Power input.

iii) Size and number of paddles.

Assume water temperature = 25°C and $\mu = 0.89 \times 10^{-3}$ N.s/m^2

b) What is coagulation and flocculation? Draw a neat sketch of a flocculator. **[8]**

OR

Q4) a) Explain type I and type II settling. What are the various types of plain sedimentation basins? Explain any one basin type with a neat sketch. **[8]**

b) Write a note on aeration and explain cascade aerator with a neat sketch. **[8]**

Q5) a) Explain tube settling method with neat sketch. **[8]**

b) Define disinfection and list and different types of disinfectants used. State the factors affecting on chlorination. **[8]**

OR

Q6) a) Explain chlorine demand, residual chlorine, super chlorination, dechlorination, rechlorination and post chlorination. **[8]**

b) Draw a neat sketch of a rapid sand gravity filter and show various components. Explain mechanisms of rapid sand gravity filter. **[8]**

SECTION - II

Q7) a) Explain demineralization of water by Reverse osmosis method. **[9]**

b) State the principles, working. advantages and disadvantages of water softening by zeolite method. **[9]**

OR

Q8) a) Write a short note on fluoridation and defluoridation. **[9]**

b) State the principles, working, advantages and disadvantages of demineralization of water by ion exchange method. **[9]**

Q9) a) Write a note on Treatment of Water of Swimming Pool. **[8]**

b) Differentiate between continuous and intermittent system of water supply. **[8]**

OR

Q10) a) What do you mean by rain water harvesting? Write a necessity of rain water harvesting system. Draw a sketch of Roof Top Rain. Water Harvesting System for a bungalow. **[8]**

b) Explain detection and prevention of wastage of water. **[8]**

Q11) a) Explain working principle of fabric filter with a neat sketch. **[8]**

b) Discuss the sources and effects of noise pollution and explain the noise control techniques. **[8]**

OR

Q12) a) Define : Sound intensity level, Sound power level, Speed of sound and sound intensity. **[8]**

b) Explain primary and secondary air pollutants and state their importance. **[8]**