Total No. of Questions : 12]

SEAT No. :

P2808

[Total No. of Pages : 3

[4958]-108
T.E.(Civil)
ENVIRONMENTAL ENGINEERING-I
(2008 Course)(Semester-II)

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

Instructions to the candidates:

1) ***Answer 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 answer books.***
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) What is the necessity of water supply scheme? Describe different phases involved in a water supply scheme. **[6]**

b) Explain factors affecting water demand. **[6]**

c) Following is the population data for a town. Water supply scheme is to be designed for this town with a design period of 30 years. Find the population at the end of the year 2040 by geometrical increase method.**[6]**

Year	1970	1980	1990	2000	2010
Population	35,000	37,500	43,500	52,000	57,500

OR

Q2) a) Write distribution forms and effects of alkalinity. **[6]**

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

i) pH ii) Colour

iii) Sulphates iv) Iron

v) Turbidity vi) Chlorides

c) Explain with a neat sketch of jack well. **[6]**

P.T.O.

Q3) a) A water treatment plant treats 250m^3/hr of water. Work out the following with respect to flocculator. **[8]**

i) Dimensions of flocculator unit.

ii) Power input.

iii) Size and number of paddles.

Assume water temperature=25°C and $\mu = 0.89\times10^{-3}$N.s/m^2.

b) Explain with a neat sketch, inlet and outlet arrangements adopted for a rectangular sedimentation tank. **[8]**

OR

Q4) a) Explain theory of sedimentation tank. Prove that theoretically, the surface loading Q/A and not the depth of water is a measure of effective removal of particles in a sedimentation tank. **[8]**

b) Explain the purpose of aeration. What are its limitations? **[8]**

Q5) a) Write comparison of slow and rapid sand filter in tabular form with reference to **[8]**

i) Economy

ii) Loss of head

iii) Rate of filtration

iv) Size of bed

v) Quantity of wash water

vi) Skilled supervision

vii) Method of cleaning and

viii) Coagulation

b) Explain break point chlorination with sketch. **[8]**

OR

Q6) a) Explain **[8]**

i) Chlorine demand

ii) Combined available chlorine

iii) Free available chlorine

iv) Residual chlorine

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 ion exchange method of water softening with sketch. **[9]**

b) Write a short note on 'adsorption' colour removal method with sketch. **[9]**

OR

Q8) a) Explain reverse osmosis and electrodialysis. **[9]**

b) Write a short note on Fluoridation and defluoridation. **[9]**

Q9) a) Write short note on: **[8]**

i) Zoning of areas ii) Dead end system

b) What are the functions of Elevated Service Reservoir? Draw a sketch of intze type tank. **[8]**

OR

Q10) a) Define rain water harvesting. Write different types of rain water harvesting system and explain any one in detail. **[8]**

b) Differentiate between Fire reserve and Break down reserve. **[8]**

Q11) a) Explain various techniques used to control noise pollution. **[8]**

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

OR

Q12) a) What are the effects of particulate matter on human health and materials? **[8]**

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