

Total No. of Questions : 12]

SEAT No. :

P2836**[4958]-1008**

[Total No. of Pages : 3

T.E.(Civil Engg.)
ENVIRONMENTAL ENGG.-I
(2012Pattern) (Semester-II)

*Time : 2½Hours]**[Max. Marks : 70**Instructions to the candidates:*

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.
- 2) Neat diagram must be drawn wherever necessary.
- 3) Assume suitable data, if necessary.

- Q1)** a) Explain various techniques used to control noise pollution? [3]
 b) Explain. [3]
- i) Frequency
 - ii) Sound pressure Level
 - iii) Wavelength of sound

OR

- Q2)** a) Explain the effect of various atmospheric stability conditions on dispersion of air pollutants. [3]
 b) Explain in brief the method of calculating resultant noise level when there are number of sources of noise existence. [3]
- Q3)** a) How is provision made for fire demand in water supply scheme. [4]
 b) Describe various types of screens used for screening the water? [4]

OR

- Q4)** a) What are the different types of pipes available for use in water supply scheme? [4]
 b) Describe different phases involved in water supply scheme? [4]
- Q5)** Enumerate and discuss in brief the various physical, chemical and bacterial characteristics of testing of raw water supplies. What steps would you take in order to make them fit for drinking? [6]

OR

- Q6)** Explain cascade Aeration? How aeration is achieved in trickling beds? Explain with neat, labeled sketch? [6]

P.T.O.

- Q7) a) Define the terms: [4]**
- i) Detention period
 - ii) Discrete particle
 - iii) Surface loading
 - iv) Mean Velocity Gradient(G)
- b) Design a rectangular plain sedimentation tank for the following data, [6]**
- i) desired average outflow from sedimentation tank= $275\text{m}^3/\text{hr}$
 - ii) water lost in desludging= 2%
 - iii) Minimum number of particles to be removed= 0.02mm
 - iv) Expected removal efficiency of minimum size particles= 70%
 - v) specific gravity of particles= 2.65
 - vi) Assumed performance of settling tank= $\text{good}=n=1/4$
 - vii) kinematic viscosity of water at $20^\circ\text{C}=1.10 \times 10^{-6}\text{m}^2/\text{sec}$
 - viii) L:B=4:1
 - ix) Detention time= 3.5hrs
- c) Enlist and Explain operational troubles associated with rapid sand filters[6]**

OR

- Q8) a) What do you understand by Coagulation and Flocculation? Why are they necessary? [4]**
- b) A filter unit is of size $4.5\text{M} \times 9\text{M}$. After filtering $10000\text{m}^3/\text{d}$ in 24 hour period, the filter is backwashed at the rate of $10\text{ lit}/\text{m}^2/\text{sec}$ for 10min. Compute average filtration rate, quantity and percentage of treated water used in washing and rate of waste water flow in each trough. The unit has 4troughs. [6]**
- c) What are the merits and Demerits of Rapid sand filters as compared with slow sand filters? [6]**
- Q9) a) Enlist various methods of color and odour removal and explain any one? [4]**
- b) Chlorine usage in treatment of $25000\text{m}^3/\text{day}$ is $9\text{kg}/\text{day}$, The residual chlorine after 10 min contact time is $0.2\text{mg}/\text{lit}$. Calculate the dosage in milligram per litre and chlorine demand of water. [6]**

- c) Explain the necessary chemical reaction “Lime soda process” of water softening. Also explain advantages and disadvantages of this method. [6]

OR

- Q10)**a) Compare “Lime soda” and Zeolite process? [4]
b) What do you understand by desalination? Why it is important? Explain in short Electrodialysis for desalination? [6]
c) What do you know about fluoridation”? Why it is necessary? Explain any three methods of removing excess fluorides from water? [6]
- Q11)**a) Write a short note on Mass curve method. [4]
b) Explain methods of Rainwater Harvesting? [6]
c) Write a short note on various methods for detection of water wastage? Explain how this wastage can be prevented? [6]

OR

- Q12)**a) Explain RO process with a neat sketch. [4]
b) Describe the various methods of distributing water and discuss advantages and disadvantages of each? [6]
c) Which methods are adopted for packaged water treatment plant? Explain the working of pressure filters? [6]

