SEAT No. :

**P2836**

**[4958]-1008**

**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.3or 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=275m$^3$/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=good=n=1/4

     vii)     kinematic viscosity of water at 20°C=1.10 X10$^{-6}$m$^2$/sec

     viii)     L:B=4:1

     ix)     Detention time=3.5hrs

   c) Enlist and Explain operational troubles associated with rapid sand filters**[6]**

<div align="center">OR</div>

*Q8)* a) What do you understand by Coagulation and Flocculation? Why are they necessary? **[4]**

   b) A filter unit is of size 4.5MX 9M. After filtering 10000m$^3$/d in 24 hour period, the filter is backwashed at the rate of 10 lit/m$^2$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 25000m$^3$/day is 9kg/day, The residual chlorine after 10 min contact time is 0.2mg/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]**

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