

Total No. of Questions : 12]

SEAT No. :

P3151

[Total No. of Pages : 2

**[4858]-1008**  
**T.E. (Civil) (Semester - II)**  
**ENVIRONMENTAL ENGINEERING - I (End - Sem)**  
**(2012 Pattern)**

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

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks*
- 4) *Assume suitable data, if necessary.*
- 5) *Use of scientific calculator is allowed*

**Q1)** Discuss the sources and effects of noise pollution. **[6]**

OR

**Q2)** Explain the principle and working of settling chamber for removing particulate matter. **[6]**

**Q3)** Explain with neat sketch the working, location and function of river and canal intake. **[6]**

OR

**Q4)** Explain the factors affecting the rate of demand. **[6]**

**Q5)** Draw the flow diagram/layout of a water supply scheme using Rapid sand filter. Write clearly the purpose of each unit in the water supply scheme. **[8]**

OR

**Q6)** Design a tube settler module with the following data- **[8]**

- a) Average output required from tube settler = 250m<sup>3</sup>/hr.
- b) Loss of water in desludging = 2% of output required.
- c) Average design flow =  $(250 \times 100) / (100 - 2) = 255.1 \text{ m}^3/\text{hr}$ .
- d) Cross section of square tubes — 50mmx50mm.
- e) Length of tubes = 1m.
- f) Angle of inclination of tubes 60°

**P.T.O.**

**Q7)** Design a clariflocculator for desired average outflow of  $250\text{m}^3/\text{hr}$ , water lost in desludging - 2%, design average flow =  $(250 \times 100)/(100-2) = 255.1 \text{ m}^3/\text{hr}$ , detention period - 20 minutes and average value of velocity gradient  $G = 40/\text{second}$ . **[16]**

OR

**Q8)** a) Explain the theory of filtration. **[4]**  
 b) With a neat sketch explain back washing of rapid sand gravity filter. **[6]**  
 c) What is coagulation & flocculation? Draw a neat sketch of a flocculator. **[6]**

**Q9)** a) Explain break point chlorination. Define disinfection and list the different types of disinfectants used. **[8]**  
 b) Chlorine usage in treatment plant of 20 MLD of water is  $8.5\text{kg}/\text{day}$ . The residual chlorine content after 10min. is  $0.2\text{mg}/\text{L}$  calculate on dosage of chlorine in  $\text{mg}/\text{L}$  and chlorine demand of water. **[4]**  
 c) State the factors affecting disinfection **[4]**

OR  
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**Q10)** a) Explain demineralization of water by Reverse Osmosis method. **[6]**  
 b) Discuss colour&odour removal by adsorption. **[6]**  
 c) Explain fluoridation & defluoridation of water. **[4]**

**Q11)** a) Differentiate between continuous & intermittent system of water supply. **[6]**  
 b) Explain detection and prevention of wastage of water. **[6]**  
 c) With a neat sketch explain dead end & reticulated distribution system. **[6]**

OR

**Q12)** a) Explain the benefits of rain water harvesting and discuss the different methods of rain water harvesting. **[9]**  
 b) Discuss the concept of packaged WTP for townships **[9]**

