Total No. of Questions : 10]

SEAT No. :

P2921

[Total No. of Pages : 3

[5669]-510

T.E. (Civil)

ENVIRONMENTAL ENGINEERING - I

(2015 Pattern)

Time : 2.30 Hours] *[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 and Q.9 or Q.10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) State various methods for control of gaseous pollutants. Explain anyone. **[6]**

b) Describe the effects due to solid waste pollution. **[4]**

OR

Q2) a) River water supply is treated by the sequence of unit operations, state various units required to treat the water also mention purpose of each unit. **[6]**

b) Discuss the factors affecting the demand of water for a community. **[4]**

Q3) a) Prove that, the surface loading (Q/A) and not the depth is a measure for effective removal of particles in a settling tank. **[6]**

b) State types of Aerators and list out the objectives of aeration. **[4]**

OR

Q4) a) What is Tube settler? Mention advantages of tube settler over the sedimentation tank. **[6]**

b) Discuss most probable number test. **[4]**

P.T.O.

Q5) a) What is coagulation. Mention various factors affecting coagulation. Write chemical reactions of any three coagulants with water. **[8]**

b) Calculate the dimensions of Rapid sand filter for two lakh population with 180 liter/capita/day of water supply. Use filtration rate equal to 140 liter/min/m^2 and mean size of sand is 1.6 mm. Find the depth of sand bed for head loss of 2.2 m, if break through index is 0.003. **[8]**

OR

Q6) a) What is Flocculation? State factors affecting the flocculation. Also discuss the concept of mean velocity gradient with formula and meaning of each term. **[8]**

b) Discuss various mechanisms involved in the theory of filtration. **[8]**

Q7) a) Distinguish between Lime soda and Zeolite process considering various points. **[8]**

b) How water is made free from colour, odour and bad taste. Discuss. **[8]**

OR

Q8) a) What is chlorination? Discuss various forms of application of chlorine. **[8]**

b) Why fluoridation and de-fluoridation is essential? Discuss different methods. **[8]**

Q9) a) Mention requirements for good distribution system. Also discuss pressure in distribution mains. **[9]**

b) The average demand of city having population 1.5 million is 260lit/Hrs/day. The demand is satisfied by continuous pumping for 24Hrs. The breakup of the demand is as below :

Time	Liter/per Capita/day
4 am to 10 am	90
10 am to 2 pm	45
2 pm to 8 pm	80
8 pm to 12 am	27
12 am to 4 am	18

Water is to be stored in the elevated service reservoir by uniform pumping. Determine balancing reserve by mass curve method. **[9]**

OR

Q10) Discuss the following : **[18]**

a) Wastage of Water- Detection and Prevention

b) Packed WTP in township

c) Intermittent system and its drawbacks

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