P - 328

Total No. of Pages : 3

Seat No.	

T.E. (Civil) (Part - III) (Semester - V) (Revised) Examination, May - 2016

ENVIRONMENTAL ENGINEERING - I

Sub. Code : 66237

Day and Date : Monday, 02 - 05 - 2016 **Total Marks : 100**

Time : 10.30 a.m. to 01.30 p.m.

Instructions: 1) **All questions are compulsory.**

2) **Assume and mention data if necessary.**

SECTION - I

Q1) Answer any three of following: **[3 × 6 = 18]**

a) Discuss the sources and quantification of sources of water.

b) Mention the breakup of domestic water utilization in liters in Indian condition and also comment on effect of various factors on consumption of water.

c) Explain the terms

i) Design period

ii) Population forecasting

d) Explain the significance of water quality parameters.

e) What are the factors considered during design of Intake well?

Q2) a) Explain the process of water treatment with flow chart. **[6]**

b) What is aeration process? Mention types of aerators. Explain cascade aerator in detail. **[6]**

OR

b) Design a rapid mixer for flow of 5MLD. Assume and mention data if required. **[6]**

c) Explain the theory of coagulation and flocculation. **[4]**

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Q3) a) Differentiate between slow sand, Rapid sand, Multimedia and Pressure filters. **[6]**

b) Explain lime-soda and ion exchange processes for water softening. **[6]**

OR

b) Explain Reverse osmosis and electro dialysis process for demineralization.**[6]**

c) Explain why head loss takes place in filtration process in rapid sand filter. **[4]**

SECTION - II

Q4) a) Explain the factors to be considered while selecting ideal pipe material for transmission of water. **[5]**

b) Determine the balancing storage of a reservoir, when the inflow is confined to the 8 hrs from 6 a.m. to 2 p.m. The total demand of 20 million liters is distributed as below. **[6]**

Time	Demand during the period in ML
0 – 4am	2
4am – 8am	6
8am – 12noon	5
12 noon-4 pm	2
4pm-8pm	3
8 pm – mid night	2

c) Explain the necessity and design considerations for thrust block. **[5]**

OR

c) Explain the types of corrosion. **[5]**

Q5) a) With neat sketches explain the layout patterns of water distribution system.**[6]**

b) A pipe network consists of three pipes as AB, BC, and CA. The K valves in the formula $H=KQ^2$ are 2,3 and 4 respectively, If inflow at junction A is 0.5 m^3/s and outflows at junction B, and C are 0.3 m^3/s and 0.2m^3/s respectively. Find the discharge through each pipe of the network. (Two iterations only). **[7]**

c) Explain the leakage and pressure testing of pipe. **[5]**

OR

c) What is equivalent pipe? Give the formulae for series and parallel connection. **[5]**

Q6) a) Explain in short the types of fire hydrants, their necessity and location. **[5]**

b) Explain the function and location of various valves used in water supply scheme. **[5]**

c) Explain how the energy budget of a building is prepared? **[6]**

OR

c) Explain how the water budget of a building is prepared. **[6]**