R – 645

Seat No.	

Total No. of Pages : 3

T.E. (Civil) (Revised) (Part - I) (Semester - V) Examination, December - 2014
ENVIRONMENTAL ENGINEERING - I (New)
Sub. Code : 45540

Day and Date : Saturday, 06 - 12 - 2014 Total Marks : 100

Time : 2.30 p.m. to 05.30 p.m.

Instructions : 1) Figures to right indicate full marks.
2) For section - I, Question No. 5 is compulsory. Attempt any Two Questions from remaining questions.
3) For section - II, Question No. 6 is compulsory. Attempt any Two Questions from remaining questions.
4) Assume suitable data if required.

SECTION - I

Q1) a) Explain Energy Budget for a residential building. [4]

b) Explain the concept of Green Building. [4]

c) What are the various green building materials? Explain any one. [4]

d) Explain the various ways to reuse the water in a residential building. [4]

Q2) a) What are the various types of water demand of town with figure? Explain any one in detail. [4]

b) Write a note on Fire Demand. [4]

c) Explain the significance of the following in water supply. [8]

i) Alkalinity.

ii) MPN.

iii) Hardness.

iv) Nitrates in water.

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Q3) a) Design a rapid mixer for a flow of 3 MLD. Use following data: **[8]**

i) Detention period – 60 sec.

ii) $G = 300\ sec^{-1}$.

iii) Dynamic Viscosity of water (μ) – 1×10^{-3} N.S/m^2 at 20°C.

b) What are various intake structures for water supply? Explain one with neat sketch. **[8]**

Q4) a) Enumerate the various methods of water softening. Explain any one method in detail. **[8]**

b) What are the various forms of Chlorination? Explain Break-point Chlorination in detail. **[8]**

Q5) Short note on **ANY THREE** **[18]**

a) Water Budget.

b) Population Forecasting.

c) Jar Test.

d) Pressure Filters.

e) Sterilization and Disinfection.

SECTION - II

Q6) a) State and explain the factors considered for the choice of pipe material. **[6]**

b) Write a note on Equivalent Pipe Method. **[6]**

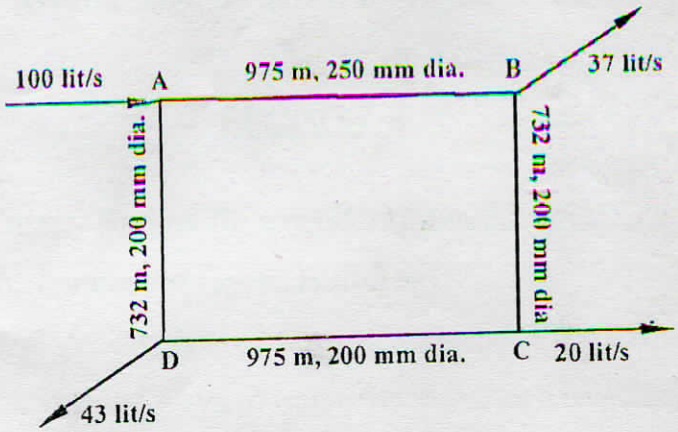
c) Discuss in detail the pressure and leakage Testing of a newly laid pipeline. **[6]**

Q7) a) How corrosion of pipes takes place? Explain the various methods of corrosion control? Explain any one in detail. **[8]**

b) Water has to be supplied to a town with 1, 50,000 population at the rate of 170 litres per capita per day from a river 5000 m away. The difference between the lowest water level in the sump and reservoir is 60 m. If the demand has to be supplied in 8 hours, determine the size of the main and the brake horse power of the pumps required. Assume maximum demand as 1.5 times the average demand. Take f = 0.03, velocity of flow in the pipe = 2.4 m/s and efficiency of pump = 80%. **[8]**

Q8) a) Enlist the various systems of distribution of water. Explain any one in detail with neat sketch. **[6]**

b) Analyse the pipe network shown in the figure. Take CH = 100 in Hazen-Williams formula. **[10]**



Q9) a) What are the various types of distribution reservoirs? Explain any one in detail. **[8]**

b) Explain the following appurtenances with diagram : **[8]**

i) Gate valve.

ii) Fire Hydrant.

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