

Code No: RT32011

R13**SET - 1****III B. Tech II Semester Supplementary Examinations, November - 2017****ENVIRONMENTAL ENGINEERING – I**

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)2. Answering the question in **Part-A** is compulsory3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) What are the objectives of water supply system? [3M]
b) Explain mass curve method for balancing storage capacity of reservoir. [4M]
c) The analysis of water from a well showed the following results in mg/l: [3M]
Ca = 65, Mg = 51, Na = 101.5, K = 21.5, HCO₃ = 248, SO₄ = 221.8, Cl = 79.2
Find the total hardness, carbonate hardness and non-carbonate hardness.
d) Explain the theory of filtration. [4M]
e) Explain break point chlorination. [4M]
f) What are the requirements of distribution system? [4M]

PART -B

- 2 a) What are water borne diseases? Write the control measures. [4M]
b) What do you mean by per capita demand? Explain various factors that affect per capita demand. [8M]
c) What are the variations in rate of demand of water? [4M]
- 3 a) Explain canal intake structure with neat sketch. [4M]
b) In a water supply scheme to be designed for serving a population of 5 lakhs, the storage reservoir is situated 6 Km away from the city and the loss of head from the source to city is 15 m. Calculate the size of the supply main by using i) Hazen – Williams formula taking C_H as 130 ii) Darcy –Weisbach formula taking f as 0.012. Assume maximum daily demand of 210 lpcd and half of the daily supply is to be pumped in 8 hours. [8M]
c) Explain the surface sources of water. [4M]
- 4 a) Explain the importance of chemical and bacteriological analysis of water used for domestic purposes. [4M]
b) Describe the procedure followed in conducting E-coli test. [8M]
c) What are the maximum acceptable BIS limits of i) Turbidity ii) Fluorides [4M]
iii) Nitrates iv) Hardness in drinking water
- 5 a) What is the principle of coagulation? [4M]
b) Design a rectangular sedimentation tank to supply water for a population of 50,000 with an assured average supply of 135 lpcd. Detention time of the tank is 4 hours. Assume data needed suitably. [8M]
c) Draw a flow chart for treatment of public water supplies [4M]

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- 6 a) What are major requirements of a disinfectant? [4M]
b) Explain the minor methods for disinfection of water. [8M]
c) Write short note on Reverse Osmosis process. [4M]
- 7 a) What are the functions of distribution reservoir? [4M]
b) Discuss different types of distribution layouts.Mention the merits and de-merits of each layout. [8M]
c) Write short notes on Sluice valve and Pressure-relief valve. [4M]

2 of 2