 40x3+34+01

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Q.P.Code:16957

T.E. Civil VI CBSGS

8.6.2017

(3 Hours) [Total Marks: 80]

N.B:

1. Question No.**1** is compulsory
2. Attempt any **three** questions from remaining **five** questions.
3. Assume any suitable data where ever required.
4. Figures to the right indicate full marks.

Q.1 Attempt any **four**

a. What are factors affecting design period of water supply schemes. 05

b. Give the maximum acceptable limits and significance of the following for the public drinking water: i) Turbidity ii) Hardness iii)Fluorides iv)pH v)MPN 05

c. To obtain 99.7% kill of bacteria, the chlorine is used in water with a residue of 0.6 mg/l. The reaction constant under these conditions is $3x10^{-2}$ per second. Calculate the contact time. 05

d. Draw graphs for monthly and daily variations in water consumption. 05

e. Write a note on disposal of solid wastes. 05

Q.2 **a.** What are various methods of distribution system? Draw a sketch, Advantage and disadvantages of : 1. Dead - end or Tree System 2. Grid Iron System. 10

b. Draw a flow diagram showing sequence of various treatment units with lake as a source of water. List these units sequentially and state the function of each unit. 10

Q.3 **a.** Design a Rapid Sand filter for a population of 1, 00,000 with water supply of 220 lit/head/day. Also design under drainage system and wash water troughs. Assume data if necessary. 10

b. Classify various types of reservoir in the water distribution system. Explain any one with neat sketch along with the design criteria 10

Q.4 **a.** Differentiate between slow sand and rapid sand filter. Also write on backwashing process of rapid sand filter 10

b. Three million litres of water per day is passing through a sedimentation tank Find the detention time for the tank? b) What is the average flow velocity through the tank? c) Compute the overflow rate. 10

Q.5 **a.** A water treatment plant treats 300 m^3/hr of water. Design the circular clariflocculator. Following parameters are to be calculated: 10

1. Dimensions of flocculator unit.
2. Power input by paddles to water

Turn Over

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3. Size and number of paddles
4. Opening below flocculator

b. Discuss any two types of water piping systems that may be employed in buildings, giving merits and demerits of each system. 10

Q.6 Write short note on(**any four**) 20

a. Methods of population forecasting and its comparison
b. Disinfection Methods
c. Hardy Cross Method used for pipe network analysis
d. Hazardous Waste Characteristics
e. Pressure Filter
f. Tube Settlers