

**B.TECH  
(SEM IV) THEORY EXAMINATION 2017-18  
WATER SUPPLY AND TREATMENT ENGINEERING**

*Time: 3 Hours**Total Marks: 70*

**Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt *all* questions in brief. 2 x 7 = 14**

- a. Define characteristic of water.
- b. What do you mean by coagulation?
- c. What are the properties of sand for filtration?
- d. Define Sedimentation.
- e. What do you understand by combined processes for secondary treatment?
- f. Define trickling filter.
- g. Write the names of Distribution of Pipe System.

**SECTION B**

**2. Attempt any *three* of the following: 7 x 3 = 21**

- a. What do you understand by the biological examination of water? Why it is necessary and how it is done?
- b. Explain the theory of filtration as used in the purification of water.
- c. Chlorine usage in the treatment of 20,000 cumec. Water is 8 Kg/day. The residual after 10 minute in contact is 0.20 mg/l. Calculate the degree in mg/lit and chlorine demand of water.
- d. What are the necessity of water supply scheme in the present-day community?
- e. Discuss various types of stresses to which water supply main is subjected.

**SECTION C**

**3. Attempt any *one* part of the following: 7 x 1 = 7**

- (a) What are the various chemical coagulation which are commonly used in coagulation process? How they remove suspended impurities?
- (b) A water has to purify the water for a town whose daily demand is  $9 \times 10^6$  lit/day. Design the suitable sedimentation tank of the water works fitted with mechanical sludge remover. Assume the velocity of flow in the sedimentation tank is 22 cm/minute and the detention period as 8 hr..

**4. Attempt any *one* part of the following: 7 x 1 = 7**

- (a) What do you understand by aeration of water? Why it is done?
- (b) Describe with the help of neat sketch the removal of iron and manganese from the water.

**5. Attempt any *one* part of the following: 7 x 1 = 7**

- (a) Write short notes on the following (i) Activated Carbon (ii) Colour and Odour removal of water
- (b) Discuss about nutrients removal in waste water tertiary treatment.

**6. Attempt any *one* part of the following:**

**7 x 1 = 7**

- (a) Assume a geometric rate of growth of population time, Calculate with the help of following census records of the population of the town in 1981.

|            |      |      |      |
|------------|------|------|------|
| Year       | 1941 | 1951 | 1961 |
| Population | 242  | 485  | 710  |

- (b) What do you understand by the term of 'Hydrograph '? and also define the term Evaporation.

**7. Attempt any *one* part of the following:**

**7 x 1 = 7**

- (a) Write short notes on the following with neat sketches (i) Gate Valve (ii) Defuse Valve.
- (b) Find the loss of head when a liquid at the rate of 400 lit/sec is flowing a pipe of 250 mm diameter which suddenly enlarge to 600 mm diameter.