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 secondry 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 in 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 9×10^6 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 magnese 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.