

**BT-6/M-20**

**36039**

**WATER SUPPLY AND TREATMENT**

Paper-CE-312E

Time : Three Hours]

[Maximum Marks : 100

**Note :** Attempt *five* questions in all, selecting at least *one* question from each unit. Assume appropriate data wherever necessary.

**UNIT-I**

1. (a) Enumerate various uses of water and explain importance and necessity of water supply schemes for the society. 10
- (b) What is per capita water demand ? Explain factors affecting per capita water demand. 10
  
2. (a) The population of a town was 30,000, 1,72,000, and 2,92,000 in year 1971, 1991 and 2011, respectively. Calculate. (a) Saturation population of town and, (b) Expected population in year 2041 using logistic curve method. 10
- (b) What is Intake ? Describe a reservoir intake with the help of a neat labelled diagram. 10

## UNIT-II

3. (a) Name common impurities present in a river water and explain their adverse effects on various uses of water. 10
- (b) What is colour ? Explain procedure of measuring colour of a water sample in the laboratory. 10
4. (a) Discuss significance of DO and explain procedure of DO determination in detail. 10
- (b) Give permissible limits for following impurities in drinking water as per IS standard and describe adverse effects, if they are present outside the permissible limits :  
(i) pH. (ii) Turbidity. (iii) Mercury. (iv) Alkalinity.  
(v) Radioactivity. 10

## UNIT-III

5. (a) Draw a schematic flow diagram of a water treatment plant for treating raw water from a highly polluted river. State objectives of various units provided in the treatment plant. 10
- (b) Define/Explain following : (i) Discrete particles.  
(ii) Detention period. (iii) Surface overflow rate.  
(iv) Settling velocity. (v) Displacement efficiency. 10

6. (a) Why is coagulation of water necessary ? Calculate volume of rapid mixing and flocculation units for a water treatment plant treating 10 MLD water. 10
- (b) Explain various mechanisms of impurities removal during filtration of water. 10

#### UNIT-IV

7. (a) What is distribution system ? Explain giving requirements of a good distribution system. 10
- (b) What is a distribution reservoir ? How is its total capacity determined ? Explain. 10
8. (a) What is difference between intermittent and continuous systems of water supply ? List various advantages and disadvantages of continuous water supply system. 10
- (b) Enumerate various layouts of distribution system and explain any one in detail giving its merits and demerits. 10
-