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Total Pages : 05

**D-180262**

**B. Tech. EXAMINATION, 2018**

Semester V (CBS)

ENVIRONMENTAL ENGINEERING-I

CE-505

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*Time : 3 Hours*

*Maximum Marks : 60*

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*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

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**Note :** Attempt *Five* questions in all, selecting *one* question from each Section A, B, C and D. Section E is compulsory.

**Section A**

1. (a) What are the *two* major types of sources of water supplies ? Discuss the comparative merits and demerits of these types of sources. **5**

- (b) Discuss the various factors that govern the selection of a particular source of water in formulating a town/city water supply scheme. 5
2. (a) What are intake towers ? Differentiate between dry and wet intake towers. 5
- (b) What are the factors which govern the location of an intake structure in river ? Explain. 5

### Section B

3. (a) The population of 5 decades from 1930 to 1970 is given below in the table. Find out the population after one, two and three decades beyond the last known decade, by using arithmetic increase method : 6

Year	Population
1950	25,000
1960	28,000
1970	34,000
1980	42,000
1990	47,000

- (b) Explain the Per Capita Demand (Q). List the factors affecting per capial demand. 4

4. (a) Explain physical and chemical properties of water. **5**
- (b) What is the difference between carbonate and non-carbonate hardness ? **5**

### Section C

- ✓5. Explain in detail sedimentation with coagulation using alum. What are the merits and demerits of using alum ? **10**
6. Explain the following water treatment :
- (a) Softening by Lime-Soda Process
- (b) Reverse osmosis and the reject management. **10**

### Section D

7. (a) Write short note on various plumbing fittings used in buildings and houses. **5**
- (b) What are pressure pipes and why is it used for water conveyance in a water supply project ? **5**

8. (a) Explain water hammer and its control measures. 5
- (b) Explain advantages and disadvantages of steel pipes. 5

### Section E

9. ~~(a)~~ What is Infiltration Gallery ? 2×10=20
- (b) Define Saturation Population.
- ~~(c)~~ What is specific yield of Aquifer ?
- ~~(d)~~ What is Turbidity ? How is it measured ?
- ~~(e)~~ Define Break-points Chlorination.

Choose the correct answer from given options :

- (f) The distribution mains are designed for :
- (i) Maximum daily demand
  - (ii) Maximum hourly demand
  - (iii) Average daily demand
  - (iv) Maximum hourly demand on maximum day
- ~~(g)~~ Alum as a coagulant is found to be most effect when pH range water is :
- (i) 2 to 4
  - (ii) 4 to 6
  - (iii) 6 to 8
  - (iv) 8 to 10

(h) Standard EDTA (ethylene diamine tetra acetic acid) solution is used to determine the :

- (i) hardness in water
- (ii) turbidity in water
- (iii) dissolved oxygen in water
- (iv) residual chlorine in water

(i) Which of the following is not a water-borne disease ?

- (i) Dysentery
- (ii) Cholera
- (iii) Typhoid
- (iv) Malaria

(j) The depression of water table in a well due to pumping will be maximum :

- (i) at a distance  $R$  from the well
- (ii) close to the well
- (iii) at a distance  $R/2$  from well
- (iv) none of the above

**2×10=20**