



MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : CE(PC)402 Environmental Engineering-I
UPID : 004446

Time Allotted : 3 Hours

Full Marks : 70

The Figures in the margin indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following :

[1 x 10 = 10]

- (i) According to IS : 1172-1963, a minimum of _____ litres of water per head per day is required for Boarding schools.
- (ii) What is the design period for the water treatment unit?
- (iii) What is the upper surface of the zone saturation called?
- (iv) The permissible limit of turbidity of domestic water is _____ ppm.
- (v) The time period for which the water is stored in a sedimentation tank is called _____.
- (vi) The pathogenic bacteria do not last long at a pH _____.
- (vii) The process of burning of municipal solid waste at high temperature is called _____.
- (viii) The total hardness of water is 100ppm as CaCO_3 equivalent. What is the type of water?
a) Soft, b) Moderately hard, c) Hard, d) Very hard
- (ix) Aeration of water is done to remove _____.
- (x) What is the fire demand of the city of 1lakh population by Buston's formula?
- (xi) The size of suspended solids lies in the range of _____.
- (xii) What is the concentration of H^+ ions in moles/L in water if the pOH value is 6?

Group-B (Short Answer Type Question)

Answer any three of the following :

[5 x 3 = 15]

2. State the steps for transporting MSW.
3. Write a short note on: Integrated Municipal Solid Waste Management System.
4. State the factors affecting water demand.
5. Draw a flow chart of Ground water treatment system.
6. What is break-point chlorination?

Group-C (Long Answer Type Question)

Answer any three of the following :

[15 x 3 = 45]

7. Write short note on:
 - a) Indore Method of Composting
 - b) Bangalore Method of Composting
 - c) treatment and disposal of MSW
8. (a) Explain in three methods of estimating the future population of a city . what are there relative merits ?
- (b) assuming the geometric rate of growth of population of a town , calculate the population of the town in the year 1991 with the help of the following census records of the population .

year	1951	1961	1971
Population on thousand	258	495	735

9. Explain the factors governing the selection of a particular source of water.
10. A filter unit is 4.5 m by 9.0 m . After filtering 10,000 cubic meter per day in 24 hours period , the filter is back washed at a rate of 10 l/sq m/sec . for 15 min compute the average filtration rate quantity and percentage of treated water used in washing and the rate of wash water flow in each trough. assume 4 troughs .
11. For the water supply of a small rural town with the daily requirement of 2,25,000 liters it is proposed to construct a distribution reservoir .
The pattern of draw off is as under :

7.00 A.M-----8.00 A.M 30% of day's supply

8.00 A.M-----5.00 A.M 35% of day's supply

5.00 A.M -----6.30 A.M 30% of day's supply

6.30 A.M-----7.00 A.M 5% of day's supply

The pumping is to be done at a constant rate of 8 hours per day (8 A.M to 4 P.M)

Determine the storage capacity of the reservoir .

*** END OF PAPER ***

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