B.Tech. Civil (Construction Management) / B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00395

June, 2017

ET-507(A) : POLLUTANTS AND WATER SUPPLY

Time : 3 hours   Maximum Marks : 70

Note : *Answer any **five** questions. All questions carry equal marks.*

1. (a) Explain the term Greenhouse effect. What are the major greenhouse gases ? Write the impact of greenhouse effect.   7

   (b) Draw a neat sketch of a cyclone scrubber to control particulate matter.   7

2. (a) Discuss in detail, the role and importance of recovery and recycling of the components of solid waste   7

   (b) Compute ultimate BOD (first stage), and 20-day BOD for a sample having BOD_5 at 20°C of 100 mg/l. Assume the value of K as 0·23 per day.   7

3. (a) Name four water-borne diseases. *4*

(b) Explain the term BOD. *2*

(c) The population of a town as obtained from a census report is as given in the table :

Year	Population
1921	3,10,000
1931	4,60,000
1941	9,90,000
1951	14,50,000
1961	16,20,000

Estimate the population of the town in the year 2011 by using the Incremental Increase Method. *8*

4. (a) Write the factors governing the location of an intake structure. *4*

(b) Name some commonly found impurities in raw water supplies that will be used for drinking purposes. How can these be removed ? Explain briefly. *8*

(c) Explain the term 'pretreatment' of water. *2*

5. (a) Calculate the settling velocity of a spherical discrete particle, of 0·05 mm diameter and specific gravity 2·5, in water. The kinematic viscosity is $1·02 \times 10^{-6}$ m^2/sec. at 19°C. Also check if the equation used for calculating settling velocity is valid for the case. 8

(b) Explain the sedimentation process used in a water treatment plant. Draw a neat sketch of a sedimentation tank. 6

6. (a) Explain the following terms : 6

(i) Clarification

(ii) Flocculation

(iii) Coagulation

(b) Draw a neat sketch for a Rapid Gravity Sand Filter. 4

(c) Explain the term Disinfection for water treatment. 2

(d) Write the advantages of using ozone as a disinfectant. 2

7. (a) Draw a typical service pipe connection to a premises with details. 7

(b) Name the commonly used sources of water supply. 3

(c) What are Dead end and Grid iron system layouts for a water distribution system ? Explain in brief. 4

8. Write short notes on any *four* of the following : $4 \times 3\frac{1}{2} = 14$

(a) Stop Cock

(b) Sluice Valve

(c) Centrifugal Pump

(d) Elevated Reservoir

(e) Breakpoint Chlorination

(f) The Environment Act, 1986

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