

[Total No. of Questions - 9] [Total No. of Printed Pages - 4]
(2068)

18219(M)

B. Tech 6th Semester Examination
Environmental Engineering-II (CBS)

CE-603

Time : 3 Hours www.epaper.tk **Max. Marks : 60**

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

Note : This question paper carries five Sections, Attempt any five questions selecting at least one question each from section A, B, C & D. Section E compulsory.

SECTION - A

1. (a) Discuss the relative merits of a separate and combined system of sewage and give the conditions favorable for the adoption of each one of them.
- (b) Differentiate between domestic sewage, industrial sewage and sanitary sewage. (10)
2. Write short note on BOD. The BOD of sewage incubated for one day at 30°C has been found to be 110 mg/l. What will be the 5-days BOD at 20°C? $K_D=0.1$ at 20°C. (10)

SECTION - B

3. Explain sedimentation with coagulation. Also differentiate between aerobic and anaerobic treatment of sewage. Name one treatment method in each category. (10)
4. Determine the size of a high rate trickling filter for the following data:
 - (i) Sewage flow =4.5 MLD
 - (ii) Recirculation ratio=1.5

- (iii) BOD of Raw Sewage=250mg/l
- (iv) BOD removal in primary tank=30%
- (v) Final effluent BOD desired=30mg/l.

Assume suitable values. (10)

SECTION - C

5. (a) Determine the size of a circular sewer for a discharge of 600lps running half full. Assume $i=0.0001$ and $\eta=0.015$. (5)
- (b) Mention the various aspects you would keep in view when designing a sewer. (5)
6. Write short notes on:
- (a) Manholes (b) drop manholes (c) inverted siphon (d) Flushing tanks (e) Ventilation (2×5=10)

SECTION - D

7. (a) What do you understand by self purification property of stream? Explain the factors affecting this property. (5)
- (b) Draw detailed diagram of oxygen sag curve. (5)
8. Explain different method for disposing municipal solid waste. (10)

SECTION - E

9. Choose the correct answer from given options:
- (i) The sewage system originates from:
- (a) Outfall sewer
 - (b) Line sewer
 - (c) House sewer
 - (d) None of these

- (ii) The sewer pipes have to be designed and checked for:
- (a) only maximum flow
 - (b) only minimum flow
 - (c) both maximum and minimum flow
 - (d) none of these
- (iii) The gas which is generally found present in sewer is:
- (a) H_2S
 - (b) CO_2
 - (c) CH_4
 - (d) All of these
- (iv) Minimum DO prescribed for a river stream to avoid fish kills is
- (a) 2 ppm
 - (b) 4 ppm
 - (c) 8 ppm
 - (d) 10 ppm
- (v) An egg shaped sewer when compared to a circular sewer is
- (a) economical
 - (b) most stable
 - (c) easier to construct
 - (d) provides better self cleansing velocity at low discharges
- (vi) Define Self cleansing velocity.

- (vii) What are facultative bacteria?
- (viii) Define sewage sickness.
- (ix) What do you mean by short circuiting in sedimentation tank?
- (x) Define sludge volume index. (2×10=20)