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N – 6518

Reg. No .....

Name : .....

Eighth Semester B.Tech. Degree Examination, May 2022

08.803 : ENVIRONMENTAL ENGINEERING – II (C)

(2008 Scheme)

Time : 3 Hours

Max. Marks : 100

Instruction : Assume suitable data wherever necessary

PART – A

Answer **ALL** questions.

1. Derive an expression for self cleansing velocity in a sewer.
2. Discuss the purposes served by an inverted siphon with help of a neat sketch.
3. Explain the term relative stability.
4. What are the limitations of activated sludge process?
5. Explain the advantages and disadvantages of oxidation ponds?
6. Explain sludge drying bed?
7. Differentiate contact bed and intermittent sand filters.
8. Note down the various sludge thickening method and explain any one detail.

(8 × 5 = 40 Marks)

P.T.O.

PART – B

Module – I

Answer any one **Full** questions form each module.

9. (a) Explain the physical and chemical characteristics of sewage? (8)

(b) A city discharges 100 m^3 /s of sewage into a river, which is fully saturated with oxygen flowing at the rate of 1500 m^3 /s and with a velocity of 0.2 m/s. The 5 days BOD of sewage at the given temperature is 250 mg/1. Find when and where the critical D.O deficit will occur in the downstream portion of the river and what is its amount? Assume coefficient of purification of the stream (f) as 4 and coefficient of deoxygenation as 0.1. (12)

OR

10. (a) Derive an expression for BOD (ultimate BOD and BOD remaining). (8)

(b) With sketches describe the following sewer appurtenances. (12)

(i) Manhole (ii) Catch basin (iii) Flushing devices

Module – II

11. (a) Compare a standard rate trickling filter with that of a high rate one. (8)

(b) A rectangular grit chamber is designed to remove particle with a diameter 0.2 mm and specific gravity 2.65. The settling velocities of these particles are found to be 0.02 m/s. A flow through velocity of 0.30 m/s will be maintained by the proportioning weir: Determine the channel dimensions for a maximum wastewater flow of 10,000m^3/day. Also provide a schematic sketch. (12)

OR

12. Design an imhoff tank to treat 5 MLD of waste water (20)

Module – III

13. (a) Determine the size of circular sewer for a discharge of 7001ps running half full. Assume i=0.0001 and n=0.015. (10)

(b) Discuss the factors affecting sludge digestion. (10)

OR

14. (a) Explain the system of plumbing in detail. (10)

(b) With a neat sketch explain the working of a sludge digestion tank. (10)

(3 × 20 = 60 Marks)