

B.E., DEGREE EXAMINATIONS: MAY/JUNE 2013

Sixth Semester

CIVIL ENGINEERING

CEE117 : Environmental Engineering - II

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The most suitable sewer for the combined system of sewerage is
 - a) Circular shape
 - b) Rectangular shape
 - c) Egg shape
 - d) Trapezoidal shape
2. The connection between a high level branch sewer to a low level main sewer could be done through
 - a) Manhole
 - b) Drop manhole
 - c) Lamp hole
 - d) Clean out
3. Detention period usually adopted for the design of grid chamber is
 - a) 60 seconds
 - b) 100 seconds
 - c) 30 seconds
 - d) 50 seconds
4. Discrete particle settling occurs in
 - a) Septic tank
 - b) Coagulation sedimentation tank
 - c) Secondary settling tank
 - d) Sedimentation tank
5. BOD of the treated waste water for the effective disposal should be
 - a) 50mg/l
 - b) 70mg/l
 - c) 20mg/l
 - d) Nil
6. A unit working purely on anaerobic suspended growth process is
 - a) Activated Sludge Process
 - b) Trickling filters
 - c) Septic tank
 - d) Contact beds
7. Cowel is provided at
 - a) First step in manhole
 - b) Upper end of ventilating column
 - c) Lower end of ventilating column
 - d) Upper end of manhole
8. If the moisture content of the sludge is reduced from 95% to 75% the volume of the sludge is decreased by
 - a) 20%
 - b) 25%
 - c) 50%
 - d) 15%

- (ii) What do you mean by variation in flow of sewage? Explain Average Flow, Dry Weather Flow and Maximum flow. (7)
22. a) (i) Calculate 1 day 37°C BOD of sewage sample whose 5 day 20°C BOD is 100mg/l . Assume K_D at 20°C at 0.1 (7)
- (ii) Discuss the importance of BOD/COD ratio in waste water treatment. (7)
- (OR)**
- b) (i) The design flow of sewage is 4 MLD and the BOD of raw sewage is 300mg/l . Design a single stage Trickling Filter to produce an effluent BOD of having 45mg/l . Assume 35% of BOD is removed in the primary settling tank. Take Organic Loading Rate as $10,000\text{ kg/ha-m/day}$. (7)
- (ii) Draw the flow diagram for a conventional Activated Sludge Plant and explain the various operations. (7)
23. a) (i) Discuss the working principles of Upflow Anaerobic Sludge Blanket Reactors (UASBR) and Anaerobic Sequential Batch Reactor (AnSBR). (7)
- (ii) Explain the various methods of effluent disposal from a Sewage Treatment Plant (7)
- (OR)**
- b) (i) Explain the various operational parameters to be considered for the effective performance of a High Rate Anaerobic Reactor. (7)
- (ii) Compare the High Rate Reactors with Conventional Reactors. (7)
24. a) (i) Write a brief note on Sludge Conditioning. (7)
- (ii) Explain the various stages of Sludge Digestion Process. (7)
- (OR)**
- b) (i) Explain the methods of Final Disposal of Sludge. (7)
- (ii) List out and explain the various factors affecting the Sludge Digestion Process. (7)
25. a) (i) What are traps, and why they are provided? What methods are to be employed to maintain the water seal in traps? (7)
- (ii) Write a brief note on Testing of House drains (7)
- (OR)**
- b) (i) Explain the systems of plumbing with respect to drainage work in a building (7)
- (ii) What is meant by ventilation of house sewers, and how it is achieved? (7)
