

B.E./B.TECH Degree Examination, December 2020

Semester - VI

CE16605 - Environmental Engineering II

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. _____ is the flow through sewers available during non-rainfall period.
 - a) Gradually varied flow
 - b) Rapidly varied flow
 - c) Dry weather flow
 - d) Storm water flow
2. _____ provides only one sewer to carry both foul sewage and rainwater.
 - a) Separate water carriage system
 - b) Combined water carriage system
 - c) Partially combined water carriage system
 - d) Conservancy system
3. The disposal of sewage from the septic tank is done by which of the following?
 - a) Clarifier
 - b) Soak pit
 - c) Aerated lagoon
 - d) Lamp holes
4. Which of the following activated sludge process has minimum food to microorganism ratio?
 - a) Extended aeration
 - b) Step aeration
 - c) Modified aeration
 - d) Conventional
5. What are the qualities of good sewer pipes?
6. Compare the functions of Screen Chamber and Grit Chamber in sewage treatment.
7. Discuss the operational troubles in trickling filter.
8. Explain "Oxygen Sag Curve".

PART B - (4 X16 = 64 marks)

09. (a) Explain in detail about the characteristics of sewage. (16)

(OR)

- (b) A population of 30000 is residing in a town having an area of 60 hectares. (16)
If the average coefficient of runoff for this area is 0.60, and the time of concentration of the design rain is 30 minutes, calculate the discharge for which the sewers of a proposed combined system will be designed for the town in question. Make suitable assumptions where needed.

10. (a) (i) Discuss the systems of sewerage with its merits and demerits. (8)
(ii) Classify the shapes of sewer pipes and discuss with neat sketches. (8)

(OR)

- (b) Explain the various sewer appurtenances with neat sketches. (16)

11. (a) What do you understand by secondary treatment of sewage? Explain any two methods of biological treatment. (16)

(OR)

- (b) Design a complete mixed activated sludge process aeration tank for (16)
treatment of 4 MLD sewage having BOD concentration of 180 mg/L. The effluent should have soluble BOD of 20 mg/L or less. Consider the following:
1. MLVSS/MLSS = 0.8
 2. Return sludge SS concentration = 10000 mg/L
 3. MLVSS in aeration tank = 3500 mg/L
 4. Mean cell residence time adopted in design is 10 days

12. (a) Explain the methods available and limitations of land disposal of sewage. (16)
Also state the environmental issues in disposal.

(OR)

- (b) Discuss the process of sludge thickening and explain with neat sketch of gravity thickener. (16)