Reg. No. : | | | | | | | | | | |

Question Paper Code: 36103

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Sixth Semester

Civil Engineering

01UCE603 - WASTE WATER ENGINEERING

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define population equivalent.
2. Write the rational formula for storm runoff estimation.
3. What are the objectives of sewage treatment process?
4. What is meant by Grey Water harvesting?
5. Define activated sludge process.
6. What are the operational troubles in trickling filter?
7. What are the methods of disposing the sewage effluent?
8. Write the zones of pollution of river.
9. Define thickening of sludge.
10. List the various methods of sludge disposal.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Explain the methods of two pipe and one pipe plumbing system. (8)

(ii) With neat sketch explain the component parts of the deep manhole. (8)

Or

(i) Explain the methods of two pipe and one pipe plumbing system. (8)

(ii) With neat sketch explain the component parts of the deep manhole. (8)

12. (a) Design the dimensions of a septic tank for small colony of 150 persons provided with an assured water supply from the municipal head works at a rate of 120 lit/c/day. Assume any data, you may need. (16)

Or

(b) Discuss about the construction, operation and maintenance of primary treatment units. (16)

13. (a) What are stabilization pond? Explain the various methods of treatment available using stabilization pond and list the major merits and demerits of it. (16)

Or

(b) Stabilisation ponds for a town of 3000 population are provided to operate in series. The larger cell has area of 60,000 m^2, and the smaller one 30,000 m^2. The average daily flow is 900 m^3/d containing 200 kg of BOD. (i) For series operation, calculate the BOD loadings based on both the total pond area and the larger cell only, (ii) Estimate the number days of winter storage available between 0.6 m and 1.5 m water levels. Assuming an evaporation and seepage loss of 2.5 mm of water per day . (16)

14. (a) Explain the various stages involved in the self purification of rivers with neat sketch. (16)

Or

(b) Explain sewage sickness with its preventive measures and also list the types of crops to be grown and write precautionary measures to be followed in sewage farming. (16)

15. (a) Explain the various thickening methods involved in sludge. State the objective of sludge thickening. (16)

Or

(b) Explain with a flow chart the working principle of a anaerobic sludge digester. (16)
