Reg. No. :

Question Paper Code: 31163

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

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. What is design period?

2. What are the causes of corrosion in sewers?

3. Name the different unit operations involved in the primary treatment of sewage.

4. Why baffles are provided in the sedimentation tank in sewage treatment?

5. What is meant by activated sludge?

6. What are the operational troubles in trickling filter?

7. What are the methods of disposing the sewage effluent?

8. What is meant by oxygen sag curve?

9. Give different types of thicker unit.

10. What is meant by ripened sludge?

PART - B (5 x 16 = 80 Marks)

11. (a) What is sewage? Explain contaminants present in the sewage and type of treatment needed to remove those contaminants present in the sewage.   (16)

Or

(b) List the various sewer appurtenances and explain about necessity of each one of them with neat sketch for well functioning of sewerage system. (16)

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) Estimate the screen requirement for a screen chamber in a sewage treatment plant treating peak flow of 60 million litres/day of sewage. (16)

13. (a) The sewage is flowing @ 4.5 million liters per day from a primary clarifier to a standard rate trick long filter. The 5-day BOD of the influent is 160 mg/l. The value of the adopted organic loading is to be 160 gm / m^3/ day and surface loading 2000 lit/m^2/day. Determine the volume of the filter and its depth. Also calculate the efficiency of this filter unit. (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) Enumerate the two general methods adopted for sewage disposal and explaining the conditions favourable for their adoption. (16)

Or

(b) Explain self purification of surface water bodies. (16)

15. (a) What is meant by sludge thickening? Explain any one of the methods used for sludge thickening. (16)

Or

(b) What is sludge digestion? Describe about anaerobic digestion process in recovery of biogas. (16)

_____

31163