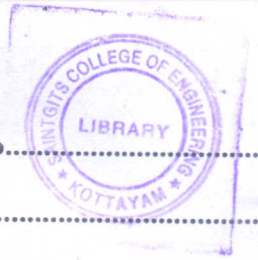


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Reg. No.....

Name.....



B.TECH. DEGREE EXAMINATION, MAY 2015

Eighth Semester

Branch : Civil Engineering

CE 010 803 – ENVIRONMENTAL ENGINEERING (CE)

(New Scheme – 2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Explain water carriage system.
2. List different types of pumps used in sewage pumping.
3. Explain function of skinning tank.
4. Explain activated sludge.
5. Explain suspended and attached growth Process.

(5 × 3 = 15 marks)

Part B

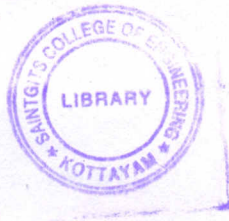
Answer all questions.

Each full question carries 5 marks.

6. Explain the need and necessity of proper sanitation for a town.
7. Write a note on flushing tank.
8. Sketch a typical layout of conventional waste water treatment plant and label its components.
9. Write a short note on oxidation ditch.
10. Write a short note on septic tank.

(5 × 5 = 25 marks)

Turn over

**Part C**

Answer all questions.

Each question carries 12 marks.

11. Explain rational and empirical methods of estimation of storm water.

Or

12. (i) A concrete channel ($n = 0.013$) rectangular in shape and 1.25 m wide and a depth of 0.75 m. must carry water at a uniform rate of flow of 2000 L/s. Determine the required channel bottomslope for this channel.

- (ii) Describe the Biological characteristics of sewage.

(6 + 6 = 12 marks)

13. Explain different shapes of sewers and their application on the field with neat sketches.

Or

14. Write a note on :

(i) Catch Basin.

(ii) Storm regulator.

(iii) Inlets.

15. Design aerated grit chamber for treatment of sewage with average flow of 60 MLD. Consider the peak factor of 2.

Or

16. Design a primary sedimentation tank to treat waste water with average flow rate of 10 MLD and peak flow of 22.5 MLD.

17. What is meant by activated sludge? Describe with neat sketches the treatment of sewage by activated sludge process.

Or

18. Design a low rate filter to treat 6.0 Mld of sewage of BOD of 210 mg/l. The final effluent should be 30 mg/l and organic loading rate is 320 g/m³/d.

19. Design a septic tank for a colony of 100 quarters of 5 persons per quarter, provided with a water supply of 135 lit/capita/day. Assume the necessary data for the design. The data available are : Sewage generation = 80% of water supply, Detention period = 18 hours, Cleaning period = once in a year, length to breadth ratio is 4: 1 and Depth of Storage of water = 1.8 m, Sludge deposit = 30 lit/person/year, Min Free Board required = 30 cm.

Or

20. Explain UASB.

[5 × 12 = 60 marks]