B.TECH. DEGREE EXAMINATION, MAY 2016

Eighth Semester

Branch : Civil Engineering

CE 010 803—ENVIRONMENTAL ENGINEERING–II (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 conservancy system.

2. Define sewage farming.

3. Explain the function of grit chamber.

4. Draw flow sheet of a trickling filter system.

5. Explain Sludge volume index and bulking of sludge.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 marks.

6. Explain time of concentration, time of entry and time of flow.

7. Write a note on grease and oil traps.

8. Explain theory of sewage sedimentation.

9. Write a short note on aerated lagoons.

10. Write a note on Imhoff tank.

(5 × 5 = 25 marks)

Turn over

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Part C

Answer **all** *questions.*
Each question carries 12 marks.

11. Explain briefly different types of sewerage system. Mention advantages and disadvantages of each.

Or

12. (i) Design a sewer to serve a population of 36,000 the rate of water supply being 135 lpcd of which 80 % finds its way into sewer. The sewers are laid at a slope of 1 in 625 and sewer should be designed to carry three times dry weather flow when running full. N = 0.012.

(6 marks)

(ii) Explain physical characteristics of sewage.

(6 marks)

13. What is self purification phenomenon of streams ? Discuss in brief, the natural force effecting self purification.

Or

14. Write a short note on sewage disposal.

15. (i) Design a grit chamber for a town having a population of 1 lakh. Assume suitable data necessary.

(10 marks)

(ii) List out different types of Screens.

(2 marks)

Or

16. Design a bar screen camber for average sewage flow 20 MLD, minimum sewage flow 12 MLD and maximum flow 30 MLD.

17. Discuss the effect of recirculation in filters with figure.

Or

18. Design a conventional activated sludge process to treat domestic sewage with diffused air aeration system from the following data :

Population	: 1,50,000	Sewage contribution	: 150 LPCD
Settled sewage BOD_5	: 200 mg /1	Effluent BOD_5 required	: 18 mg /1
F/M ratio	: 0.2	MLSS	: 3000 mg /1

Air requirement : 100 m^3 / day per kg of BOD_5 removed.

19. Arrive at the dimensions of an oxidation pond to treat 1 MLD of sewage received from a suburb of a city, located in an area of hot climate, the BOD of sewage being 320 mg/lt.

Or

20. Explain : (i) Anaerobic digestion.

(ii) UASB.

(5 × 12 = 60 marks)