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**Question Paper Code : 40818**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Sixth Semester

Civil Engineering

CE 6605 – ENVIRONMENTAL ENGINEERING – II

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Assume suitable data if found necessary.

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. How do you classify the sewage ?
2. What is effluent standard ?
3. State the objective of providing sewerage works.
4. What do you understand by self cleaning velocity ?
5. Write the significances of grey water harvesting.
6. Why grit chamber is provided in sewage treatment process ?
7. Define the term activated sludge.
8. Write short note on UASB.
9. Enlist methods of treated sewage effluent disposal.
10. Give out the advantages of sludge thickening.

PART – B

(5×13=65 Marks)

11. a) i) Briefly explain the sources of waste water generation. (8)
- ii) Give an account of factors affecting the quantity of storm water. (5)

(OR)

- b) Determine designed discharge for a combined system serving population of 50000 with rate of water supply of 135 LPCD. The catchment area is 100 hectares and the average coefficient of runoff is 0.60. The time of concentration for the design rainfall is 30 min and the relation between intensity of rainfall and duration is  $I = 1000/(t + 20)$ . (13)



12. a) i) Discuss the comparative merits and demerits of combined system and separate system. (7)

ii) Explain the different types of storm water inlets used in collection system. (6)

(OR)

b) A combined sewer was designed to serve an area of 60 sq.km with an average population density of 185 persons/hectare. The average rate of sewage flow is 350 L/Capita/day. The maximum flow is 50% in excess of the average sewage flow. The rainfall equivalent of 12 mm in 24 h can be considered for design, all of which is contributing to surface runoff. What will be the discharge in the sewer ? Find the diameter of the sewer if running full at maximum discharge. (13)

13. a) Write a note in detail about theory, construction, design aspects and disposal of effluent of septic tank with neat sketch. (13)

(OR)

b) Discuss in detail about classification of screens and state application of each class. (13)

14. a) Elaborate the principle, construction and design aspects of trickling filter with neat sketch. (13)

(OR)

b) Elucidate the waste stabilisation pond system of sewage treatment. (13)

15. a) i) Explain the factors affecting self purification of natural streams. (5)

ii) Draw a typical oxygen sag curve and explain its meaning and state its importance. (8)

(OR)

b) With the help of neat sketches explain the process, types and gas collection of anaerobic sludge digester. (13)

### PART - C

(1×15=15 Marks)

16. a) Illustrate the laying, jointing and testing of sewers to convey community sewage. (15)

(OR)

b) Give a detailed account on activated sludge process of sewage treatment with help of neat sketch. (15)