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**Question Paper Code: 55104**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2019

Fifth Semester

Civil Engineering

15UCE504 ENVIRONMENTAL ENGINEERING

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. \_\_\_\_\_ is one of the population forecasting methods. CO1- R  
(a) Incremental method (b) Algorithm method  
(c) khosla's method (d) Rankin's method
2. Design period of a water supply system is CO1- R  
(a) 10-15 years (b) 40-50 years (c) 80-100 years (d) 200 years
3. Aeration of water is done to remove CO2- R  
(a) Odour (b) Colour (c) Bacterias (d) Hardness
4. In a water treatment plant ,iron and manganese can be removed from the water by CO2- R  
(a) Aeration (b) Aeration & coagulation  
(c) Aeration & flocculation (d) Aeration & sedimentation
5. As compared to cast iron pipes, steel pipes are CO3- R  
(a) Heavier (b) Stronger (c) Costlier (d) Less susceptible to corrosion
6. The suitable layout of a distribution system for irregularly growing town is CO3- R  
(a) Dead end system (b) Grid iron system (c) Radial system (d) Ring system
7. The chemical most commonly used to increase speed of sedimentation of sewage CO4- R  
is  
(a) Sulphuric acid (b) Copper sulphate (c) Lime (d) Sodium permanganate

- 8 Sewerage system is usually designed for CO4- R  
 (a) 10 years (b) 25 years (c) 50 years (d) 75 years
- 9 Standard BOD is measured at CO5- R  
 (a) 20<sup>0</sup>C – 1 day (b) 25<sup>0</sup>C – 3 day (c) 20<sup>0</sup>C – 5 day (d) 30<sup>0</sup>C – 5 day
- 10 Effect of sewage disposal into water bodies CO5- R  
 (a) Eutrophication (b) Reduces the dissolved oxygen  
 (c) Affects aquatic life (d) All the above

PART – B (5 x 2= 10 Marks)

11. Write the methods of population forecasting? CO1- R
12. What is Disinfection? CO2- R
13. What are the components of water distribution system? CO3- R
14. Mention any two appurtenances used in sewerage system. CO4- R
15. State the purpose of using the skimming tanks. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) What is intake structure? Explain with neat sketches, the various types of intake structures based on sources. CO1- App (16)

Or

- (b) Identify the daily water demand of the city in 2031, if the per capita water demand is 135 Lpcd and the city population records is as given below. CO1- App (16)

Census year	1961	1971	1981	1991	2001
population	25000	52000	94000	164000	247000

17. (a) (i) Develop the design for a rectangular sedimentation tank for 5 MLD flow. CO2 -App (8)  
 (ii) Write the design principles of flash mixer and flocculator. CO2 -App (8)

Or

- (b) Identify the factors affecting disinfection? Examine the conventional and modern methods which are used to disinfect water. CO2 -App (16)

18. (a) Explain the different water distribution system layouts with neat sketches. CO3- Ana (16)
- Or
- (b) Explain the different plumbing systems with neat sketches .And also compare the plumbing systems. CO3- Ana (16)
19. (a) Explain the waste water characteristics and significance. CO4- U (16)
- Or
- (b) What are the types of sewers? Explain in brief with neat diagram. CO4- U (16)
20. (a) What do you understand by a trickling filter? Describe with the help of a neat sketch the biological process involved in working of a trickling filter. CO5- U (16)
- Or
- (b) Explain the mechanism of anaerobic and aerobic sludge digestion with their relative merits and demerits. CO5- U (16)

