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Question Paper Code	12350
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B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023
 Fifth Semester
Civil Engineering
20CEPC502 - PUBLIC HEALTH AND SANITATION ENGINEERING
 (Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

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| | <i>Marks,
K-Level, CO</i> |
| 1. Define Per-capita demand. | 2,K1,CO1 |
| 2. Classify the sources of water. | 2,K2,CO1 |
| 3. Distinguish between Gravity conduits & Pressure conduits. | 2,K2,CO2 |
| 4. Write the permissible limits of the following for public drinking water
(i) colour, (ii)pH , (iii)Chlorides, (iv) Sulphates. | 2,K2,CO2 |
| 5. What is meant by grey water? | 2,K1,CO4 |
| 6. Differentiate between unit operations and unit processes in wastewater treatment. Give at least two examples in each. | 2,K2,CO4 |
| 7. Define sludge volume index. | 2,K1,CO5 |
| 8. List out the different methods of aeration in ASP. | 2,K1,CO5 |
| 9. Define dilution factor. | 2,K1,CO6 |
| 10. Illustrate the biological zones in lakes. | 2,K2,CO6 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) The population of the town panchayat as per past census records are furnished below. Calculate the population in the year 2031&2041 using the following methods. 13,K2,CO1
 (i) Arithmetical increase method
 (ii) Geometrical increase method

Census year	1941	1951	1961	1971	1981	1991	2001	2011
Population	35642	39487	46816	57859	70458	78543	92131	116500

OR

- b) What is meant by springs? Explain the types of springs with a neat sketch. 13,K2,CO1
12. a) Illustrate the different types of pipe joints in conveyance system. 13,K2,CO2

OR

b) Explain the layout of distribution system in detail with a neat sketch. *13,K2,CO2*

13. a) (i) A city with a population of 100,000 has an area of 50km^2 . Rate of water supply is 110 litres per capita per day of which 80% turns into sewer. The average run-off coefficient is 0.5 and intensity of rainfall is 14.5mm/hr. Estimate the quantity of combined sewage. Take peak factor as 2.5. *8,K2,CO4*
(ii) What is population equivalent? State its uses. *5,K1,CO4*

OR

b) Discuss the various sewer appurtenances in details with a neat sketch. *13,K2,CO4*

14. a) Explain in detail about the design, construction and function of septic tank with a neat sketch. *13,K2,CO5*

OR

b) Explain the purpose, function and types of trickling filter with a neat sketch. *13,K2,CO5*

15. a) What do you mean by sludge thickening process? Explain gravity thickening and air flotation unit with a neat diagram. *13,K2,CO6*

OR

b) Summarize the principle of the self-purification process of river and the various stages of oxygen sag curve. *13,K2,CO6*

PART - C (1 × 15 = 15 Marks)

16. a) Explain the Principle and function of Rapid sand filter with a neat sketch. *15,K2,CO3*

OR

b) Describe principle and function of Clarifloccuator in detail with a neat sketch. *15,K2,CO3*