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PRESIDENCY UNIVERSITY

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Bengaluru

Mid Term Examinations - October 2026

Date: 05/10/2026 **Time:** 09:30 AM - 11:00 AM

Course Code: CIV2516 **Course Name:** Waste Water Treatment and Disposal Systems

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2	CO3
Marks	24	17	49

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Distinguish between grab sampling and composite sampling.	2	CO1	BT1
2	List the importance of wastewater characterization.	2	CO1	BT1
3	Differentiate between BOD and COD.	2	CO3	BT1
4	Average sewage flow is 2.8 MLD and peak factor is 2.5. Calculate peak sewage flow.	2	CO2	BT3
5	Initial DO = 8 mg/L, final DO = 5 mg/L and dilution factor = 15. Calculate BOD_5,20.	2	CO3	BT3

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Explain the physical and chemical characteristics of wastewater and their significance in wastewater treatment.	10	CO1	BT2
7	Explain the different water carriage systems of sewerage in detail.	10	CO1	BT2

PART C: Answer Any 1 Following Questions. 15 M

Q.N.	Questions	M	CO	BT
8	(a) Explain the purpose of a manhole and state where it is provided. (b) A population of 50,000 is residing in a town having an area of 80 hectares. If the average coefficient of runoff for this area is 0.60 and the time of concentration of the design rain is 30 minutes, calculate the discharge for which the sewers of a proposed combined system will be designed for the town. Take: • Intensity of rainfall = 2.8 cm/hr • Per capita water demand = 135 LPCD • Sewage conversion factor = 0.80	15	CO3	BT3

9	(a) What are sewer appurtenances? List any five important sewer appurtenances. (b) A residential area in Sarjapur, Bengaluru, has a projected population of 55,000 residing over an area of 45 hectares. Find the design discharge for the sewer line for the following data: • (i) Rate of water supply = 160 litres per capita per day • (ii) Average impermeability coefficient for the entire area = 0.40 • (iii) Time of concentration = 35 minutes • (iv) The sewer line is to be designed for a flow equivalent to WWF + 3 DWF • (v) Use the U.S. Ministry of Health formula for determining rainfall intensity. • (vi) Assume that 80% of the water supply reaches the sewer as wastewater. Determine the total design discharge of the sewer line in m^3/s.	15	CO2	BT3

PARTD: Answer Any 1 Following Questions. 15 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
10	(a) Explain any five purposes of determining BOD in wastewater. (b) During a BOD test, a 5% dilution of wastewater is used. The DO of aerated dilution water is 3.6 mg/L, DO of the original wastewater is 0.8 mg/L and DO after five days of incubation is 0.7 mg/L. Calculate the BOD_5 and ultimate BOD of the wastewater. Take the deoxygenation constant as 0.12/day.	15	CO3	BT3
11	(a)Explain carbonaceous BOD (CBOD) and nitrogenous BOD (NBOD). Describe the experimental procedure for determining BOD_5 using the dilution method. (b) Determine the ultimate BOD of a sewage having a 5 day BOD of 180 mg/L at 20 C. Assume the deoxygenation constant as 0.18 per day	15	CO3	BT3