



PRESIDENCY UNIVERSITY

BENGALURU

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End - Term Examinations – May / June 2026

Date: 25-05-2026

Time: 01:00pm – 04:00pm

School: SOE	Program: B.TECH	
Course Code : CIV3035	Course Name: WASTEWATER TREATMENT AND DISPOSAL SYSTEMS	
Semester: VI	Max Marks: 100	Weightage: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	6	6	28	30	30

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.				10Q x 2M=20M	
1.	Sewer is used for carrying wastewater and human waste away from buildings to a place where they can be safely got rid of. List the various shapes of sewer.	2 Marks	L1	CO1	
2.	A wastewater sample diluted in 100 times with aeration water had an initial DO of 7 mg/l and after 5 days of incubation at 200C, the DO was zero. What is the BOD of wastewater?	2 Marks	L1	CO2	
3.	The different types of screens are based on size of openings used in wastewater treatment. Define screen.	2 Marks	L1	CO3	
4.	Conventional treatment or conventional mechanical wastewater treatment is the term used to describe the standard method of treatment designed to remove organic matter and solid from solution. List the four stages of treatment.	2 Marks	L1	CO3	
5.	Outline the types of systems of sanitation.	2 Marks	L1	CO1	
6.	Define Chemical oxygen demand.	2 Marks	L1	CO2	

7.	Write the purpose of grit chamber.	2 Marks	L1	C03
8.	Write the objectives of primary treatment.	2 Marks	L1	C03
9.	We need the characteristics and examination of sewage before designing any sewage treatment system to work efficiently. Name the chemical characteristics of sewage.	2 Marks	L1	C02
10.	Define sullage.	2 Marks	L1	C01

Part B

Answer the Questions.

Total Marks 80M

11.	a.	Primary sedimentation tank is also known as primary clarifier and is located just after grit chamber. It may be rectangular, circular or square shape. Summarize primary sedimentation tank.	10 Marks	L2	C03
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Or

12.	a.	Wastewater generated from residential area near Jayanagar, bangalore contains high concentration of oil and grease which will interfere with removal of organic matter in secondary treatment. Suggest a suitable preliminary treatment unit which can be used to oil and grease from waste water. Explain the suggested treatment unit with the help of neat diagram	10 Marks	L2	C03
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13.	a.	Demonstrate the function of various treatment units to treat domestic wastewater.	10 Marks	L3	C03
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Or

14.	a.	Design a screen device for a flow of 40MLD with approach velocity 1.2 m/sec. Assume depth of flow as 1.05 m, size of opening is 20 mm and diameter of bars is 15 mm. Calculate the head loss through screen device. The bars are provided with an inclination 50° to horizontal.	10 Marks	L3	C03
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15.	a.	The treated domestic sewage of town is to be discharged in a natural stream. Compute the percentage purification required in the treatment plant with the following data. Population = 50000 BOD contribution per capita = 0.07 kg/day BOD stream of on u/s side = 3mg/L Permissible maximum BOD of stream on D/s side = 5mg/L	10 Marks	L2	C05
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		Dry weather flow of sewage = 140ltr /capita /day Minimum flow stream = 0.13 m^3/s			
Or					
16.	a.	The raw sewage or the partially treated sewage is thrown into natural waters having large volume. The sewage in due course of time is purified by what is known as the self-purification capacity of natural waters. Summarize the conditions necessitating treatment of sewage before disposal by dilution.	10 Marks	L2	CO5
17.	a.	The secondary wastewater treatment is required to remove the soluble and colloidal organic matters which remain after primary treatment. As it is mostly biological process also called biological treatment. Explain the types of biological wastewater treatments with any three examples.	10 Marks	L2	CO4
Or					
18.	a.	A trickling filter is a type of wastewater treatment system. It consists of a fixed bed of rocks or plastic media over which sewage flows downward. In relation to this compare SRTF and HRTF.	10 Marks	L2	CO4
19.	a.	Design a conventional activated sludge plant to treat domestic sewage with diffused aeration system, given the following data: Population = 35000 Average sewage flow = 180 lpcd BOD of sewage = 220 mg/L BOD removed in primary treatment = 30% Overall BOD reduction desired = 85%	20 Marks	L3	CO4
Or					
20.	a.	A town having a population of 78000 persons is producing the following sewages 1) Domestic sewage at 278 lpcd having 250 mg/l of BOD 2) Industrial sewage at 700000 lpd having 1350 mg/l of BOD Design high rate single stage trickling filters for treating above sewage. Assuming that the primary sedimentation removes 30% of BOD. Allow an organic loading of 12000 kg/ha-m/day (excluding recirculation sewage). The recirculation ratio is 0.5 and surface	20 Marks	L3	CO4

		loading should not exceed 190 ML/ha/day (including recirculation sewage). Also calculate the efficiency of the filter and BOD of the effluent.			
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21.	a.	The self-purification of a stream refers to its natural ability to recover from pollution by removing pollutants and restoring its original water quality through various physical, chemical, and biological processes. Illustrate the indices of self-purification.	20 Marks	L3	C05
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Or

22.	a.	When sewage is discharged into the river, the receiving water gets polluted due to waste products present in sewage effluent. But the conditions do not remain same forever, because the natural forces of purification go on acting up on the pollution elements and bring back the water into its original condition. This automatic purification in due course of time is called the 'Self Purification' phenomena. Illustrate the actions involved in 'Self Purification' phenomena.	20 Marks	L3	C05
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