JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT TEST -2 EXAMINATIONS- 2025

B.Tech 5th Semester (CE)

COURSE CODE (CREDITS): 18B11CE512 (3)

MAX. MARKS: 25

COURSE NAME: Sewage Treatment and Disposal

COURSE INSTRUCTORS: Dr. Rishi Rana Kalia

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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day BOD is 613 ppm, compute the total daily 5 day oxygen demand in						00-3	Marks
							14141183
					CO-2	4	
						Į	Marks
							5
influent BOD = 220 mg/L and effluent BOD = 30 mg/L. Find the							Marks
-							
						CO-3	4
					Marks		
the ultimate BOD and the 5-day BOD.							
A BOD test is performed on 25 ml of waste water through the standard					CO-4	7	
BOD b	ottles at differ	ent times, whi	ch gave follow	lowing results. Compute			Marks
the value of rate constant, value of BOD ₅ and Ultimate BOD.							
	Bottle No.	Initial DO	Incubation	Final DO			
ļ		(mg/l)	time (days)	(mg/l)			
. 1	¹ 3 1	10.1	0.5	4.57			
·	2	10.1	1.0	7.6			
4		10.1	ļ				
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	L	<u> </u>	4				
A wastewater sample has a reported 5-day BOD of 650 mg/L at a standard						CO-3	3
							Marks
						1	
	day BC kg, and of sewa List and charact The floinfluen percent (kg/day Calcula acid. F the ulti A BOD b the value A waste incubate constant after 8 effect of	day BOD is 613 ppm kg, and the populatio of sewage per day as List and describe four characteristics of sew The flow to an activity influent BOD = 220 percentage BOD residual. Further, using a the ultimate BOD and A BOD test is perform BOD bottles at differ the value of rate considerable by a series of the value of rate considerable. A BOD test is perform BOD bottles at differ the value of rate considerable by a series of the value of rate considerable by a series of the value o	The average sewage flow from a day BOD is 613 ppm, compute the kg, and the population equivalent of sewage per day as 96 g List and describe four key laborato characteristics of sewage The flow to an activated sludge influent BOD = 220 mg/L and e percentage BOD removal. Also (kg/day). Calculate the COD of a wastewa acid. Further, using a reaction rate the ultimate BOD and the 5-day BOD bottles at different times, whithe value of rate constant, value of Bottle No. Initial DO (mg/l) 1 10.1 2 10.1 3 10.1 4 10.1 5 10.1 6 10.1 7 10.1 8 10.1 A wastewater sample has a reported incubation temperature of 20 °C. G constant (k) is 0.23 day 1 at 20 °C, after 8 days if the BOD test were incompleted incubation temperature of 20 °C. G after 8 days if the BOD test were incompleted incubation.	day BOD is 613 ppm, compute the total daily 5 dkg, and the population equivalent of sewage. Assof sewage per day as 96 g List and describe four key laboratory tests that he characteristics of sewage The flow to an activated sludge process plant influent BOD = 220 mg/L and effluent BOD = percentage BOD removal. Also calculate the (kg/day). Calculate the COD of a wastewater containing acid. Further, using a reaction rate constant of 0 the ultimate BOD and the 5-day BOD. A BOD test is performed on 25 ml of waste water BOD bottles at different times, which gave follow the value of rate constant, value of BOD ₅ and Ultime (days) Bottle No. Initial DO Incubation (mg/l) time (days) 1 10.1 0.5 2 10.1 1.0 3 10.1 2.0 4 10.1 2.5 5 10.1 3.0 6 10.1 3.5 7 10.1 4.5 8 10.1 5.0 A wastewater sample has a reported 5-day BOD of 6 incubation temperature of 20 °C. Given that the formstant (k) is 0.23 day ⁻¹ at 20 °C, determine the of after 8 days if the BOD test were instead conducted effect of temperature on the reaction rate constant for the consta	The average sewage flow from a city is 23×10 ⁴ l/d. if the average BOD is 613 ppm, compute the total daily 5 day oxygen derkg, and the population equivalent of sewage. Assume per capit of sewage per day as 96 g List and describe four key laboratory tests that help in determine characteristics of sewage The flow to an activated sludge process plant is 20 MLD, vinfluent BOD = 220 mg/L and effluent BOD = 30 mg/L. F percentage BOD removal. Also calculate the BOD load (kg/day). Calculate the COD of a wastewater containing 516 mg/L of acid. Further, using a reaction rate constant of 0.1 per day, det the ultimate BOD and the 5-day BOD. A BOD test is performed on 25 ml of waste water through the s BOD bottles at different times, which gave following results. Containing the value of rate constant, value of BOD ₅ and Ultimate BOD. Bottle No. Initial DO Incubation Final DO (mg/l) time (days) (mg/l) 1 10.1 0.5 4.57 2 10.1 1.0 7.6 3 10.1 2.0 1.6 4 10.1 2.5 5.5 5 10.1 3.0 6.4 6 10.1 3.5 3.6 7 10.1 4.5 4.6 8 10.1 5.0 6.3 A wastewater sample has a reported 5-day BOD of 650 mg/L at a sincubation temperature of 20 °C. Given that the first-order react constant (k) is 0.23 day-1 at 20 °C, determine the oxygen demand after 8 days if the BOD test were instead conducted at 15 °C. Asset effect of temperature on the reaction rate constant follows the conv	The average sewage flow from a city is 23×10 ⁴ l/d. if the average 5 day BOD is 613 ppm, compute the total daily 5 day oxygen demand in kg, and the population equivalent of sewage. Assume per capita BOD of sewage per day as 96 g List and describe four key laboratory tests that help in determining the characteristics of sewage The flow to an activated sludge process plant is 20 MLD, with an influent BOD = 220 mg/L and effluent BOD = 30 mg/L. Find the percentage BOD removal. Also calculate the BOD load applied (kg/day). Calculate the COD of a wastewater containing 516 mg/L of acetic acid. Further, using a reaction rate constant of 0.1 per day, determine the ultimate BOD and the 5-day BOD. A BOD test is performed on 25 ml of waste water through the standard BOD bottles at different times, which gave following results. Compute the value of rate constant, value of BOD ₅ and Ultimate BOD. 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