Seat No.:		Enrolment No.		
a		GUJARAT TECHNOLOGICAL UNIVERSITY ME – SEMESTER II– EXAMINATION – WINTER - 2016		
Subject Code: 2721806 Date: 19/11/ Subject Name: Environmental Modeling Time: 2:30 pm to 5:00 pm Total Marl			2016	
Instru	ction	s:	15:70	
	1. 2. <i>3</i> .	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks		
Q.1	(a) (b)	Explain the phenomena of stratification and overturn of lakes What are the applications of Environmental Modeling.	07 07	
Q.2	(a)	Write a note on Mass balance concept for environmental modeling.	07	
	(b)	Enlist and explain the types of equations used to find the growth rate of biomass in lakes	07	
		OR		
	(b)	Derive the mass balance equation for disposal of conventional pollutant in a river $C=C_0exp$ (-kx/u) considering plug flow conditions.	07	
Q.3	(a)	Derive the Streeter Phelps equation for finding the DO deficit in a stream	07	
	(b)	Write a short note on DO sag curve along with a neat sketch. OR	07	
Q.3	<b>(a)</b>	Derive the equation to calculate the concentration of a biodegradable	07	
		pollutant discharged into the lake.		
	(b)	Give the classification of zones lakes based on biological activity and based on productivity.	07	
Q.4	(a)	Enlist the parameters used to describe the water quality and explain in brief.	07	
	(b)	Write a short note on Waste load allocation OR	07	
Q.4	(a)	Write a note on River segmentation highlighting its need.	08	
	(b)	What are the phenomena on which the transport of toxic chemicals in water principally depends? Explain each.	06	
Q.5	(a)	Enlist the different types of models and explain each type along with examples.	07	
	(b)	Explain clearly the difference between Calibration and Simulation. OR	07	
Q.5	(a)	In a lake the sum of all inputs is 45 m3/s while the out flow is 50 m3/s and increasing 0.4 m3/s every day. If the initial volume of lake is $0.5x 10^8$ m3, calculate the volume of a lake over time . Estimate the time in days when there will be no water in the lake.	14	