

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– V (New) EXAMINATION – WINTER 2019****Subject Code: 2151303****Date: 25/11/2019****Subject Name: Physico - Chemical Treatment Technologies****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		Marks
Q.1	(a) Why are screens necessary before the treatment of wastewater?	03
	(b) Write a short note on grit removal mechanism.	04
	(c) Derive the Stokes law for settling velocity of discrete particles.	07
Q.2	(a) Define : (1) SOR (2) WOR (3) Scour velocity	03
	(b) Differentiate between unit process and unit operations.	04
	(c) Write a Short note with a neat sketch on “Horizontal flow Grit Chamber”.	07
OR		
	(c) Write a short note on “Breakpoint chlorination”.	07
Q.3	(a) Explain the terms along with their values for RSF (i) Uniformity coefficient (ii) Effective size	03
	(b) Differentiate between Physical treatment & Chemical treatment for waste water.	04
	(c) Enlist the different types of mixing equipments & explain any one with sketch.	07
OR		
Q.3	(a) Differentiate between: Coagulation and Flocculation	03
	(b) Explain various physical and chemical characteristics of water and wastewater.	04
	(c) Explain the procedure for statistical analysis of waste water flow rate data.	07
Q.4	(a) Enlist the factors which affect chlorination.	03
	(b) Differentiate between discrete and flocculent settling.	04
	(c) Explain the mechanisms of filtration.	07
OR		
Q.4	(a) List down the various methods used for particle destabilization.	03
	(b) Write a short note on ‘Tube Settlers’	04
	(c) Explain with neat sketch: dissolved air flotation for surface water treatment.	07
Q.5	(a) Prepare a list of disinfectants and explain any one in brief.	03
	(b) Write down the sources and effects of the following parameters in water (i) Organic matter (ii) Turbidity	04
	(c) Explain Sludge Drying bed and its design criteria.	07
OR		
Q.5	(a) Enlist and explain the mechanisms by which the colloids are stabilized.	03
	(b) Explain the term “Zeta Potential” with neat sketch.	04
	(c) Explain aerobic and anaerobic sludge digestion.	07
