

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2021****Subject Code:3151303****Date:09/09/2021****Subject Name:Physico-chemical Treatment Technology****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.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
Q.1 (a) Enlist the components of wastewater flows	03
(b) Name the statistical parameters used for the analysis of wastewater management data	04
(c) Calculate the head loss for a water at 20 °C having density (kg/m ³) and viscosity (kg/m.s) 998 and 1.002*10 ⁻³ passing thro' a bed of sand having grain diameter of 0.4 mm and shape factor of 0.85. Take porosity of bed as 0.45. The sp. gr. of sand is 2.7. The depth of the bed is 0.65 m. Take filtering velocity as 5 m/hr.	07
 Q.2 (a) Discuss in brief purpose of grit chamber	03
(b) Show classification of screens	04
(c) Point out the important characteristics of filter medium	07
OR	
(c) Explain Jar test for optimum coagulant dosage	07
Q.3 (a) Write a short note: Ionic layer compression	03
(b) Summarize the important characteristics of ideal disinfectant	04
(c) Show settling column analysis for type-1 suspension	07
OR	
Q.3 (a) Write a short note: Interparticle bridging	03
(b) Summarize the principal mechanisms/phenomena that contributes to the removal of material by the granular media depth filter	04
(c) Show settling column analysis for flocculating particles	07
Q.4 (a) Explain elutriation of sludge in brief.	03
(b) Write a short note: Aerobic sludge digestion	04
(c) Derive the equation for stokes law	07
OR	
Q.4 (a) Explain chemical conditioning in brief.	03
(b) Write a short note: Anaerobic sludge digestion	04
(c) Discuss in details the various disinfection mechanisms	07
 Q.5 (a) With the help of a neat sketch, show sludge drying bed	03
(b) Categorize the sludge conditioning methods	04
(c) Describe the factors influencing the action of disinfectants	07
OR	
Q.5 (a) List various sources of sludge from effluent treatment plant	03
(b) Draw only a schematic diagram of rotary vacuum drum filter	04
(c) Write a short note: Disinfection methods and means	07