

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021****Subject Code:3160611****Date:26/11/2021****Subject Name:Environmental Engineering****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) Explain the physical characteristics of water	03
	(b) Define BOD. Give the significance of BOD test for wastewater.	04
	(c) Draw a neat flow chart of a conventional water treatment plant. Enlist the function of each unit.	07
Q.2	(a) What is design period? Explain the factors affecting the selection of the design period.	03
	(b) Find $BOD_{(5,20)}$ of a wastewater sample, if $BOD_{(3,27)}$ of the sample is 220 mg/lit. Take k_D value at 20° C as 0.1 day^{-1}	04
	(c) Explain the factors affecting the self purification capacity of the river.	07
OR		
	(c) Explain the zones of pollution of a polluted stream	07
Q.3	(a) Differentiate between plain sedimentation and sedimentation aided with coagulation	03
	(b) Differentiate between suspended growth and attached growth process.	04
	(c) Design a primary sedimentation for treating 8 MLD of water	07
OR		
Q.3	(a) Why back washing is required in a rapid sand filter? What is the commonly used rate of back washing?	03
	(b) Explain with neat sketch, working of a flash mixer.	04
	(c) Explain different types of traps used in house drainage system.	07
Q.4	(a) Explain how you will find the dry weather flow required for design of sewerage system.	03
	(b) Differentiate between activated sludge unit and trickling filter.	04
	(c) Calculate the diameter and discharge of a circular sewer laid at a slope of 1 in 450 when it is running half full, and with a velocity of 1.0 m/s. Take Manning constant as 0.013.	07
OR		
Q.4	(a) Draw a house drainage plan for a 3BHK detached bungalow.	03
	(b) Enlist different equipments that can be used to control suspended particulate matter. Explain working of any one of them in detail.	04
	(c) A single stage trickling filter is required to be designed to treat 3 MLD of sewage with BOD of 250 mg/L. Assume organic loading rate as 11000 kg/ha-m/day and recirculation ratio as 1.0. What will be the BOD of the effluent?	07
Q.5	(a) Enlist sources of noise pollution.	03
	(b) Define EIA. Draw a flow chart showing different steps involved in the EIA process.	04
	(c) Explain sanitary land filling used for solid waste disposal.	07

OR

- Q.5** (a) Find the head loss due to friction in a rising main using following data: **03**
1. Length of rising main= 750m
 2. Diameter of the pipe= 0.25m
 3. discharge= 1.5 m³/min
 4. Coefficient of friction= 0.0075.
- (b) Why EIA is required for achieving the goal of sustainable development. **04**
- (c) Explain the effect of air pollution on human beings **07**
