

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2023****Subject Code:3160611****Date:05-12-2023****Subject Name: Environmental Engineering****Time:02:30 PM TO 05:00 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.

		<b>MARKS</b>
Q.1	(a) What are the requirements of good distribution system?	03
	(b) What control measures should be taken to prevent the outbreak of waterborne diseases?	04
	(c) Explain different factors affecting the water demand.	07
Q.2	(a) The pH of influent and effluent of an Industry is 5.3 and 8.4 respectively. Find average pH of waste water.	03
	(b) Write site selection criteria for an intake structure.	04
	(c) Make a list of various forms of chlorination and explain breakpoint chlorination.	07
<b>OR</b>		
	(c) Explain working of centrifugal pump with neat sketch.	07
Q.3	(a) Find the settling velocity of a discrete particles in water, having particle diameter $7 \times 10^{-3}$ cm and specific gravity 2.65. Assume Reynolds's number less than 0.5. Water temperature is $20^{\circ}\text{C}$ and kinematic viscosity of water at $20^{\circ}$ is $1.01 \times 10^{-2}$ cm <sup>2</sup> /sec.	03
	(b) If the 5 day BOD at $20^{\circ}\text{C}$ temperature of a waste water sample is found to be 180 mg/lit, find 3 day BOD at $30^{\circ}\text{C}$ temperature of the sample. Assume $K_{D(20)} = 0.1/\text{day}$	04
	(c) Draw a complete flow diagram of waste water treatment plant and describe the function of each unit.	07
<b>OR</b>		
Q.3	(a) Explain in brief "Sewage sickness".	03
	(b) Enlist different biological processes. Differentiate suspended growth process and attached growth process.	04
	(c) Design a bar screen for a peak average flow of 65 million liters per day	07
Q.4	(a) Define following. (1) Sullage (2) Rubbish (3) Soil pipe.	03
	(b) State the requirements of good sewer joint. Enlist common types of joints used in sewer.	04
	(c) Differentiate between Rapid sand filter and Slow sand filter.	07
<b>OR</b>		
Q.4	(a) Why circular sewers are more preferred for the sewerage system?	03
	(b) Classify the traps according to shape and describe with sketch the same.	04
	(c) Describe different system of plumbing with neat sketch.	07
Q.5	(a) What is solid waste management? Enlist its objectives.	03
	(b) Explain the effect of air pollution on human health.	04
	(c) Write a short note on "Sanitary land filling".	07

**OR**

- |     |   |    |
|-----|---|----|
| Q.5 | (a) Describe the methods of controlling noise pollution.  | 03 |
|     | (b) Discuss in brief “EIA”.   | 04 |
|     | (c) Give classification of air pollutants and explain in brief various sources of air pollutants. | 07 |

\*\*\*\*\*