

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-III (NEW) EXAMINATION – WINTER 2023****Subject Code:3131305****Date:16-01-2024****Subject Name:Environmental Chemistry-I****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.

		<b>Marks</b>
<b>Q.1</b>	(a) List out any three instruments along with usage in the Environmental chemistry lab.	<b>03</b>
	(b) Write cleaning process for Glassware.	<b>04</b>
	(c) Explain experimental methods for determination of Total Solids (TS) present in wastewater sample.	<b>07</b>
<b>Q.2</b>	(a) Explain Ion-exchange process for demineralization water.	<b>03</b>
	(b) Differentiate between distilled water and de-mineralized water.	<b>04</b>
	(c) Explain the principle of the Ultraviolet Spectroscopy.	<b>07</b>
	<b>OR</b>	
	(c) Explain Reverse Osmosis process with its advantages and disadvantages.	<b>07</b>
<b>Q.3</b>	(a) Explain the following terms: Molarity, Normality, Molality	<b>03</b>
	(b) State and explain application of Dalton's law of partial pressure and Henry's Law.	<b>04</b>
	(c) Prepare methods for making 0.01M H <sub>2</sub> SO <sub>4</sub> standard solution.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Differentiate between accuracy and precision.	<b>03</b>
	(b) Calculate weight required for the following solutions preparation: (i) 0.2M NaOH 250 ml, (ii) 0.5N CaCl <sub>2</sub> 500 ml	<b>04</b>
	(c) Prepare methods for making 0.01N NaOH standard solution.	<b>07</b>
<b>Q.4</b>	(a) Explain the concept of quantitative analysis.	<b>03</b>
	(b) Differentiate between Volumetric and Gravimetric analysis.	<b>04</b>
	(c) Explain experimental methods for determination of Methyl Orange and Phenolphthalein Alkalinity present in wastewater sample.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Enlist different types of electrodes used in potentiometric analysis.	<b>03</b>
	(b) What problems will arise if standard method is not followed for analysis?	<b>04</b>
	(c) Explain experimental methods for determination of Calcium Hardness present in water sample.	<b>07</b>
<b>Q.5</b>	(a) Why blank reading is taken for chloride determination?	<b>03</b>
	(b) Write a note on application of alkalinity data.	<b>04</b>
	(c) Explain experimental methods for determination of Chloride present in wastewater sample.	<b>07</b>

**OR**

- Q.5**
- (a)** Draw a flowchart indicating different types of solids. **03**
  - (b)** Highlight the significance of alkalinity in water bodies, water treatment and wastewater treatment. **04**
  - (c)** Explain experimental methods for determination of Sulphate present in wastewater sample. **07**

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