

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III(NEW) EXAMINATION – SUMMER 2023

Subject Code:3131305

Date:26-07-2023

Subject Name:Environmental Chemistry-I

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.

- Q.1** (a) Explain the importance of familiarization with environmental chemistry laboratory? **03**
- (b) Enlist explain in types all types of hardness in water **04**
- (c) Explain the method of determination of total solids, total dissolved solids and total suspended solids in water. **07**
- Q.2** (a) Calculate the volume required for preparation of 2500mL of 0.1N H₂SO₄ solution. **03**
- (b) Define pH. Highlight the significance of pH in water and wastewater. **04**
- (c) Explain standard procedure of analysis of chlorides in water. **07**
- OR**
- (c) Explain the procedure to determine total hardness of water in laboratory along with the calculation.. **07**
- Q.3** (a) Highlight the significance of pH and alkalinity in water. **03**
- (b) What is the significance of high sulfate concentration in water supplies? **04**
- (c) Explain the working principle of turbidity meter. Explain this with the help of diagram. **07**
- OR**
- Q.3** (a) Write the uses and capacity of following glassware and instruments: **03**
i) volumetric flask ii) round bottom flask iii)measuring cylinder
- (b) Define following terms: Molality, Morality, normality, **04**
- (c) Explain the principle of Spectrophotometer. Draw a neat sketch and explain components of same. **07**
- Q.4** (a) State Dalton's law and Henry's law. **03**
- (b) If total air pressure is 1 atm, calculate partial pressure of oxygen. Also calculate equilibrium concentration of oxygen in mg/L in water at 20°C. Henry's law constant for oxygen in water at 20°C is 0.73 atm-m³/mol **04**
- (c) What is the importance of standardizing the chemicals? Highlight characteristics of primary standards **07**
- OR**
- Q.4** (a) Highlight the need of a standard method for analysis of water and wastewater quality parameters. **03**
- (b) Enlist the general gas laws. Highlight the application of any two in Environmental Engineering field. **04**
- (c) Give classification of sampling techniques and explain each of them with their importance. **07**

- Q.5** (a) Differentiate between Distilled water and De-mineralized water **03**
(b) What do you mean by the term distilled water? Write a note on a method for preparation of distilled water. **04**
(c) Explain the procedure to carry out determination of sulphate in laboratory **07**
- OR**
- Q.5** (a) Highlight the application of following processes: reverse osmosis, ion-exchange and ultra pure water purification system **03**
(b) Write a note on gravimetric analysis. **04**
(c) Write the procedure of determination of alkalinity in water. **07**
