

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2131301****Date: 04/06/2019****Subject Name: Environmental Sciences 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.

MARKS

- Q.1** (a) List out the glassware used in the Environmental Laboratory. **03**
 (b) Write down the method of the preparation of the Distilled water. **04**
 (c) Balance the following Equation: **07**

$$\text{K}_2\text{Cr}_2\text{O}_7 + \text{KI} + \text{H}_2\text{SO}_4 \rightarrow \text{Cr}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4 + \text{I}_2 + \text{H}_2\text{O}$$
- Q.2** (a) Why it is required to calibrate the instrument used for the Analysis. **03**
 (b) Explain about the different types of Error. **04**
 (c) Explain generalized Gas law and derive the Equation as well as Unit of the Universal gas constant. **07**
- OR**
- (c) Write a note on “Dispersion and Scattering methods of analysis.” **07**
- Q.3** (a) Explain about Drying. **03**
 (b) Determine the weight required for prepare the following solutions: (a) 300 ml 0.5 N Potassium sulfite (b) 600 ml 0.6 N Aluminum sulfate **04**
 (c) Write a note on “Volumetric Analysis.” **07**
- OR**
- Q.3** (a) Explain about Precipitation. **03**
 (b) Determine the weight required for prepare the following solutions: (a) 750 ml 0.1 M CaCl_2 (d) 250 ml 0.25 M MgSO_4 **04**
 (c) Enlist Emission methods for the analysis. Explain any one in detail. **07**
- Q.4** (a) Explain the types of bond. **03**
 (b) Write the process for standardization of solution with Primary Standard. **04**
 (c) Enlist the different types of Electrode. Explain any one in detail. **07**
- OR**
- Q.4** (a) Explain about the selection of the proper Normality. **03**
 (b) Enlist and explain different types of Sampling procedure. **04**
 (c) Explain standard methods for the determination of Phenolphthalein and Methyl Orange Alkalinity in water. **07**
- Q.5** (a) Differentiate between Molarity and Normality. **03**
 (b) Write note on “Standard methods for analysis of water and waste water.” **04**
 (c) Explain standard methods for the determination of sulfates in water. **07**
- OR**
- Q.5** (a) Differentiate between Molarity and Molality. **03**
 (b) Explain the different types of solid present in the water. **04**
 (c) Explain standard methods for the determination of Chloride in water. **07**
