

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:3151302****Date:01/02/2021****Subject Name:Advance Environmental Instrumentation****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		Marks
Q.1	(a) Give the modern classification of chromatographic techniques with one example of each.	03
	(b) Write a short note on pH meter	04
	(c) What is Advanced Environmental Instrumentation? What is its Importance?	07
Q.2	(a) Draw the figure of pH electrode and explain its working principle	03
	(b) Give the difference between visible and instrumental method for measurement of turbidity.	04
	(c) Explain the working principle and operation of each unit of Nephelo turbidity meter with neat sketch.	07
Q.3	(a) Explain the conductivity meter.	03
	(b) Explain the merits of gas chromatography.	04
	(c) Derive and explain Lambert's and Beer's law	07
Q.4	(a) What do you mean by Online sensors?	03
	(b) List down components of Flame photometer. Explain each component.	04
	(c) State the applications of High Performance Liquid Chromatography.	07
Q.5	(a) Explain the Principle of UV – Visible Spectroscopy with it's applications in Environmental Engineering.	03
	(b) Describe the Double Beam UV – Visible Spectrophotometer with neat sketch.	04
	(c) Explain the working principle and operation of each unit of High Performance Liquid Chromatography with sketch.	07
Q.6	(a) Write applications of Potentiometry.	03
	(b) Discuss the application of TOC analyzer in environmental engineering field.	04
	(c) Explain in detail sensor method for determination of dissolved oxygen.	07
Q.7	(a) Enlist the types of Detectors used in Spectroscopy.	03
	(b) Write down the application, advantages and disadvantages of Ion Selective Electrode.	04
	(c) Explain the working principle and operation of each unit of Colorimeter with sketch.	07
Q.8	(a) Differentiate between Accuracy and precision with example	03
	(b) Define the types of determinate errors with at least one example of each.	04
	(c) Define the following terms in detail: (i) Mean (ii) Medium (iii) Range (iv) Average Deviation (v) Relative average deviation (vi) Standard deviation (vii) Co-efficient of variation.	07