

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3173524****Date:27/12/2021****Subject Name:Advanced Instrumentation Techniques****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.

		MARKS
Q.1	(a) Explain the following terms:	03
	i) Spectroscopy	
	ii) GPS	
	iii) Electrical Conductivity	
	(b) What is Instrumentation? Give its significance in environmental Science & Technology field.	04
	(c) Write a short note on Flame photometer with principle, instrumentation and applications in environmental analysis.	07
Q.2	(a) What is Chromatography? Give classification of the chromatographic methods.	03
	(b) What is quadrat sampling? And explain Sampling Techniques used in Quadrat Survey?	04
	(c) What is remote sensing? And illustrate all components of the remote sensing with the help of figure.	07
OR		
	(c) Explain the components and working of Atomic Absorption Spectrometer in detail.	07
Q.3	(a) Explain the Lambert's and Beer's Law in brief.	03
	(b) Explain analysis of soil pH and soil conductivity in detail.	04
	(c) Explain the Gas chromatography with neat sketch.	07
OR		
Q.3	(a) What is pH? And enlist the different methods of pH measurement.	03
	(b) Write down working principle of colorimeter.	04
	(c) Write a short note on IR spectroscopy with principle, instrumentation and applications in environmental analysis.	07
Q.4	(a) Write down the advantages and disadvantages of Flame photometer.	03

- (b) Differentiate between Portable Instruments and Stationary Instruments **04**
(c) Write a note on mass spectroscopy with neat sketch. **07**

OR

- Q.4** (a) State principle of ion chromatography. Highlight its application. **03**
(b) Explain Non Dispersive Infrared Gas Analyzer with neat sketch. **04**
(c) Write a short note on UV-Visible spectrophotometer. **07**

- Q.5** (a) Write down the application, advantages and disadvantages of Photoionization Detector. **03**
(b) Write a note on gas displacement collectors with neat sketch. **04**
(c) Explain Noise Dosimeter and its placement on human body. **07**

OR

- Q.5** (a) Write down the application, advantages and disadvantages of Thermal Conductivity Detector. **03**
(b) Write a short note on Fritted Bubblers with neat sketch. **04**
(c) Write a short note on Integrated or long term air sampling. **07**
