

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- V (New) EXAMINATION – WINTER 2019****Subject Code: 2151302****Date: 21/11/2019****Subject Name: Advanced Environmental Instrumentation****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.

- Q.1** (a) Define pH. Draw a neat sketch of pH electrode. **03**
(b) Give significance of 'Advanced Environmental Instrumentation' in environmental engineering field. **04**
(c) Write a note on instrumental method of turbidity measurement. **07**
- Q.2** (a) Explain principle of flame photometer with neat sketch. **03**
(b) Differentiate between Flame Photometer and Atomic Absorption Spectroscopy. **04**
(c) State and explain the working principle of Raman spectroscopy with neat sketch. **07**

OR

- (c) Explain the working principle of Infrared spectroscopy with neat sketch. **07**
- Q.3** (a) What is chromatography? Give classification of chromatographic methods. **03**
(b) State principle of ion chromatography. Highlight its application. **04**
(c) Enlist components of Gas Chromatography and explain its working principle with neat sketch. **07**

OR

- Q.3** (a) Explain the principle of gas chromatography. **03**
(b) State principle of Adsorption Column Chromatography. Highlight its application. **04**
(c) Write a note on High Performance Liquid Chromatography. **07**
- Q.4** (a) Write down the applications of Spectrophotometer and Flame Photometer. **03**
(b) Explain accuracy and precision with example. **04**
(c) Explain the components of Ion Selective Electrode with neat sketch. **07**

OR

- Q.4** (a) Write down the applications of Ion selective electrode. **03**
(b) Explain determinate and indeterminate error with example. **04**
(c) List down components of Flame photometer. Explain each component. **07**
- Q.5** (a) Define Beer's law and Lambert's law. Give its application. **03**
(b) Write down the applications of High Performance Liquid Chromatography. **04**
(c) Write a note on TOC analyzer. **07**

OR

- Q.5** (a) State the principle of UV-Visible Spectrophotometer and draw a neat sketch. **03**
(b) Define: Mean, Median, standard deviation & Precision. **04**
(c) What is polarography? Explain the online DO meter with neat sketch. **07**
