Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-Vth Examination December 2010

Subject code: 151302

Subject Name: Advanced Environmental Instrumentation

Date: 15 /12 /2010 **Time: 03.00 pm - 05.30 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)**	What is standard Hydrogen Electrode? Explain its working principle with sketch.	**07**
	(b)	What is Electrochemistry? Explain faraday's law of electrolysis.	**07**
Q.2	**(a)**	Explain glass electrode for pH measurement with its advantages and disadvantages and maintenance.	**07**
	(b)	What is conductivity? Give the classification of conductivity meter in Environmental Engineering Field.	**07**
		OR	
	(b)	Write a short note on "Ion Selective meter".	**07**
Q.3	**(a)**	Explain the working principle and operation of each unit of High Performance Liquid Chromatograph with sketch.	**07**
	(b)	Give the applications of High Performance Liquid Chromatograph.	**07**
		OR	
Q.3	**(a)**	Explain the merits and demerits of the gas chromatograph.	**07**
	(b)	Explain the working principle and operation of each unit of gas chromatograph with sketch.	**07**
Q.4	**(a)**	Write a short note on "Toxicity test for industrial wastewater."	**07**
	(b)	Write a short note on selection of test organisms for toxicity test.	**07**
		OR	
Q.4	**(a)**	Explain the working principle and operation of each unit of Colorimeter with sketch.	**07**
	(b)	Write a short note on "Spectrophotometer" with neat sketch.	**07**
Q.5	**(a)**	Give the difference between visible and instrumental method for measurement of turbidity.	**07**
	(b)	Explain the working principle and operation of each unit of Nephelo turbidity meter with neat sketch.	**07**
		OR	
Q.5	**(a)**	Explain 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**
	(b)	Analyst reported the following percentage (%) of Feo in a sample: 17.65, 17.70, 17.68, 17.60, 17.58, 17.63 and 17.64. Calculate mean, medium, range, average deviation, relative deviation, standard deviation and co-efficient of variation.	**07**

****