Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (OLD) - EXAMINATION – SUMMER 2018

Subject Code: 133502 **Date: 23/05/2018**

Subject Name: Analytical 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.**

Q.1	**(a)**	Define the term: Chromatography. Explain theory and instrumentation of Gas chromatography.	**07**
	(b)	What is Quality? Write short notes on: QC & TQM.	**07**
Q.2	**(a)**	Write note on good laboratory practices and sampling of liquid.	**07**
	(b)	What are absorption laws? Explain both the laws with derivation used in UV-Visible spectroscopy.	**07**
		OR	
	(b)	1. What is Rf value? Explain various factors affecting Rf value in paper Chromatography. 2. Enlist different methods for the preparation of column.	**07**
Q.3	**(a)**	Explain volumetric estimation of brass alloy with procedure and calculation.	**07**
	(b)	What are the characteristics should pumps have used in HPLC. Discuss any one in detail with diagram.	**07**
		OR	
Q.3	**(a)**	What is titration? Explain complex metric titrations in details with suitable example	**07**
	(b)	Write a note on column Chromatography.	**07**
Q.4	**(a)**	Write detailed note on TGA (thermo-gravimetric analysis) and validation of analytical methods.	**07**
	(b)	Write short notes on: Errors, Metal ion indicators, Quality control	**07**
		OR	
Q.4	**(a)**	Explain gravimetric analysis of Nickel.	**07**
	(b)	Give details of precipitation, co-precipitation, post precipitation and precipitation from homogenous solution.	**07**
Q.5	**(a)**	Explain principle, instrumentation and working of Mass spectroscopy	**07**
	(b)	Define following terms: normality, stoichiometry, titration, oxidation, molarity, saturated solution, strength.	**07**
		OR	
Q.5	**(a)**	Explain instrumentation and application of IR spectroscopy. Also explain the difference between formaldehyde and formic acid on the basis of IR spectroscopy.	**07**
	(b)	Define following terms: Electromagnetic spectrum, Red shift, Finger print region, Hook's law, Degree of freedom, Nitrogen rule, Chromophore.	**07**

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