Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VI• EXAMINATION–SUMMER 2015

Subject Code: 161705 **Date: 12/05/2015**

Subject Name: Instrumentation Measurement-II

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)**	Explain following phenomena which are associated with spectroscopic study (i) Absorption (ii) Adsorption (iii) Reflection (iv) Emission (v) Fluorescence (vi) Mass Spectroscopy (vii) Diffraction.	**07**
	(b)	Obtain gauge factor for strain gauge. Draw and describe bonded resistive strain gauge to measure dynamic pressure.	**07**
Q.2	**(a)**	Nuclear Magnetic Resonance (NMR) versus Electron Spin Resonance (ESR). Draw and describe basic principle, construction and working of Mass Spectrometer.	**07**
	(b)	How Gas chromatography is differing than process chromatography? List the detector used in gas chromatography and explain at least any two from them with principle, working and its application.	**07**
		OR	
	(b)	Draw and describe with neat sketch, basic principle, application and limitation of ozone analyzer.	**07**
Q.3	**(a)**	Explain pH theory with equation and scale. Give brief on pH meter.	**07**
	(b)	Why conductivity of aqueous solution change? Explain with neat sketch, working and application of electrical conductivity meter used in Demineralization plant.	**07**
		OR	
Q.3	**(a)**	Draw and describe with neat sketch, basic principle, limitation and advantages of Paramagnetic oxygen analyzer.	**07**
	(b)	Justify the need of moisture measurement in instrumentation. Explain infrared type moisture measurement method.	**07**
Q.4	**(a)**	Write the unit of viscosity and list the all viscometers and explain any one with it diagram, principle, application and temperature compensation.	**07**
	(b)	How derived measurement is more accurate than direct measurement? Explain it with electronic approach to length measurement.	**07**
		OR	
Q.4	**(a)**	Explain capacitive type strain gauge with essential diagram, working and special application.	**07**
	(b)	Describe engineering explanation of displacement, velocity and acceleration as prime parameter in vibration measurement and analysis.	**07**
Q.5	**(a)**	List the force balance method. Explain with all necessary details how piezo-electric transducer will work as force measuring device.	**07**
	(b)	How many methods are available to measure density? Explain DP transmitter method for density measurement.	**07**
		OR	

Q.5	**(a)**	Differentiate liquid and gads density measurement technique with suitable example.	**07**
	(b)	Draw and describe mass-spring Seismic sensor with all necessary details and its limitation.	**07**

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