Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V- EXAMINATION – SUMMER 2016

Subject Code: 151702 **Date: 09/05/2016**

Subject Name: Sensors and Signal Conditioning

Time: 02:30 PM to 05:00 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)**	Discuss the calibration and standards, with examples.	**07**
	(b)	Enumerate the various test signals, its waveform and mathematical representation.	**07**
Q.2	**(a)**	Explain the Measurement of phase angle, Frequency measurement, Time interval measurement with necessary circuit diagram and calculation.	**07**
	(b)	Describe the resistive optical transducers in detail with necessary sketches.	**07**
		OR	
	(b)	Describe the Capacitive displacement transducers in detail with relevant diagrams.	**07**
Q.3	**(a)**	Discuss the Movable core type inductive transducers with necessary sketches.	**07**
	(b)	Describe the construction features of magnetostrictive transducer and obtain input and output relationship with application.	**07**
		OR	
Q.3	**(a)**	Explain Hall effect phenomenon in detail. Discuss the application of hall effect in transducers with suitable example.	**07**
	(b)	What are the Electro-dynamic vibration transducers? Discuss in detail.	**07**
Q.4	**(a)**	What are the piezoelectric materials? Discuss the piezoelectric strain transducers.	**07**
	(b)	Discuss the Photoelectric phenomenon. Explain Photovoltaic transducers and its applications.	**07**
		OR	
Q.4	**(a)**	Explain the Radioactive thickness gauge with necessary diagram/waveforms.	**07**
	(b)	Explain how Electrode systems are designs for measurement of Bioelectric signals.	**07**
Q.5	**(a)**	Explain the Analog comparator and Digital comparator system. Discuss the window comparator ckt. in detail.	**07**
	(b)	Explain the Digital input – output devices, in detail, with associated applications.	**07**
		OR	
Q.5	**(a)**	Explain Sampling system with components and sampling circuit. Discuss the various sampling circuit performance parameters.	**07**
	(b)	Explain concept of Oscillators with mathematical proof .Describe the Crystal Oscillator with its basic equation/sample components value.	**07**

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