Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(NEW) • EXAMINATION – WINTER 2016

Subject Code:2170310 Date:23/11/2016

Subject Name:Introduction to Virtual Biomedical Instrumentation

Time:10.30 AM to 1.00 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)	Draw and explain the generalized architecture of virtual system.	07
	(b)	Give a difference between virtual vs. traditional instrument.	07
Q.2	(a)	Explain Sensor module with classification of sensors.	07
	(b)	Compare: Graphical and Textual Programming	07
		OR	
	(b)	Discuss the merits and demerits of distributed virtual instrument.	07
Q.3	(a)	Enlist and explain various types of A-to-D converters.	07
	(b)	Draw and explain the block diagram of virtual ECG machine.	07
		OR	
Q.3	(a)	Enlist and explain various types of D-to-A converters.	07
	(b)	Draw and explain the block diagram of virtual instrumentation of air flow and lung volume analysis.	07
Q.4	(a)	Iterate the conventional EMG measurement procedure.	07
	(b)	Define the effect of spectral leakage. Discuss the use of smoothing window.	07
		OR	
Q.4	(a)	Explain the applications of joint intramuscular and surface EMG recordings.	07
	(b)	Define noise and signal distortion. Classify types of noises based on various sources.	07
Q.5	(a)	Draw and explain the block diagram of virtual instrumentation of HRV analysis.	07
	(b)	Enlist the types of digital filters.	07
		OR	
Q.5	(a)	Explain various applications of VBI in the field of virtual reality & 3D graphical modeling.	07
	(b)	Differentiate characteristics of IIR and FIR filters.	07

****