

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2020****Subject Code:2170310****Date:25/01/2021****Subject Name:Introduction to Virtual Biomedical Instrumentation****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) What are the disadvantages of Traditional instruments?	03
	(b) Describe the applications of database & information system interfaces.	04
	(c) What is Virtual Instrumentation? Explain advantages of VI.	07
Q.2	(a) Classify presentation and control interfaces.	03
	(b) Give the comparison between Graphical and Textual programming.	04
	(c) Explain processing module with classification.	07
Q.3	(a) What is Aliasing effect?	03
	(b) Enlist various types of A-to-D converters and explain any one.	04
	(c) What is the requirement of analog signal conditioning? Classify various analog signal conditioning techniques.	07
Q.4	(a) Classify types of noises based on various sources.	03
	(b) Enlist various types of D-to-A converters and explain any one.	04
	(c) Explain the process of analog to digital conversion in detail.	07
Q.5	(a) Explain different displays of VI.	03
	(b) Differentiate between Array and Cluster with example.	04
	(c) Enlist and explain different type of loops with its structure.	07
Q.6	(a) Enlist and explain the techniques for QRS detection.	03
	(b) List the advantages and disadvantages of digital filters.	04
	(c) Draw and explain the block diagram of Virtual ECG machine. Also list out the advantages over traditional ECG machine.	07
Q.7	(a) Explain Virtual Prototyping.	03
	(b) Explain various Lung volume measurements.	04
	(c) Explain the block diagram of virtual instrumentation of modular EMG machine.	07
Q.8	(a) What is Heart Rate Variability? Explain importance of HRV analysis.	03
	(b) Explain various applications of VBI in the field of Virtual Reality & 3D graphical modeling.	04
	(c) Explain the applications of virtual biomedical instrumentation for examination and diagnosis of various physiological systems.	07
