

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2170310

Date: 26/11/2018

Subject Name: Introduction to Virtual Biomedical Instrumentation

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.

		MARKS
Q.1	(a) Differentiate: Traditional Vs Virtual Instruments	03
	(b) What is the role of software in virtual Instrumentation.	04
	(c) Define Virtual Instrumentation. Enlist the five major advantages of VI in detail.	07
Q.2	(a) Enlist the components used in Sensor module.	03
	(b) List out the types of presentation and control interface module. What are the drawbacks of terminal user interface?	04
	(c) Draw the architecture of Virtual Instrumentation. Explain the following components in detail.	07
	1) Sensor Interface	
	2) Processing Module	
	OR	
	(c) Write a brief note on Graphical user interface and multimodal presentation.	07
Q.3	(a) Define: Functional integration module	03
	(b) Draw a stream line development flow with graphical system design. Explain each component in detail.	04
	(c) What are the benefits of graphical programming method?	07
	OR	
Q.3	(a) Define: 1) Sensor 2) Transducer	03
	(b) Enlist the characteristics of sensors. Explain Sensitivity and accuracy in detail.	04
	(c) Explain the characteristics of DAC in detail.	07
Q.4	(a) List out the advantages and disadvantages of successive approximation ADC.	03
	(b) What are the main components of analog signal conditioning? Explain any one application with the help of diagram.	04
	(c) Enlist the types of ADC. Explain the working operation of Flash ADC with the help of diagram.	07
	OR	
Q.4	(a) What is the difference between Arrays and clusters?	03
	(b) Explain the various types of loops in VI with the help of example.	04
	(c) Draw and explain the block diagram of Virtual ECG machine. Also list out the advantages over traditional ECG machine.	07
Q.5	(a) What do you mean by aliasing effect? How it can be avoided in the signal?	03
	(b) List out the application of windowing.	04
	(c) Explain the application of virtual reality & 3D graphical modelling in biomedical field.	07

OR

Q.5

- (a) Enlist the types of physiological noise.
- (b) Enlist and define the features of ECG signal.
- (c) Explain the applications of virtual biomedical instrumentation for monitoring and research.

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03

04

07

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