Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– II(Old course) • EXAMINATION (Remedial) – WINTER- 2015

Subject Code: 1723101 **Date: 09/12/2015**

Subject Name: Virtual Biomedical instrumentation System

Time:2:30 pm to 5:00 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)**	Define and explain with architecture of Virtual Biomedical Instrumentation System.	**07**
	(b)	Discuss the advantages and disadvantages of PC based Data monitoring system.	**07**
Q.2	**(a)**	What is signal limit setting and ADC bit resolution? Calculate measurement precision of 12 bit A/D converter for various device voltage ranges and limit setting.	**07**
	(b)	Explain different types of ADC in detail.	**07**
		OR	
	(b)	Explain different types of DAC in detail.	**07**
Q.3	**(a)**	Which parameters should be considered while acquiring multiple analog waveforms having various frequency components ranging from 100Hz to 8 KHz?	**07**
	(b)	Explain analog and digital triggering with proper examples.	**07**
		OR	
Q.3	**(a)**	Draw and explain the block diagram for PCG signal acquisition and classification for heart rate variability.	**07**
	(b)	Write a short note on run length encoding for data compression.	**07**
Q.4	**(a)**	Explain Virtual audiometer with detailed block diagram and flowchart.	**07**
	(b)	Explain the advantages and disadvantages between conventional and virtual system.	**07**
		OR	
Q.4	**(a)**	Explain Virtual spirometer with necessary block diagram.	**07**
	(b)	Write a short note on run length encoding for data compression.	**07**
Q.5	**(a)**	Draw and explain the block diagram for ECG signal acquisition and classification for diagnosis of cardiac disorders.	**07**
	(b)	Explain parallel port communication for Virtual Biomedical Instrumentation System.	**07**
		OR	
Q.5	**(a)**	Draw and explain the block diagram for EEG signal acquisition and classification for diagnosis of cardiac disorders.	**07**
	(b)	Explain serial port communication for Virtual Biomedical Instrumentation System.	**07**

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