Seat No.:	Enrolment No.
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Subject Code: 171705

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VII • EXAMINATION - WINTER • 2014** 

Date: 29-11-2014

Tir	ne: 1 cructio 1. 2.	Name: Instrumentation for Bio-medical Applications  0:30 am - 01:00 pm  Total Marks: 70 ons:  Attempt all questions.  Make suitable assumptions wherever necessary.  Figures to the right indicate full marks.	0
<b>Q.1</b>	(a)	Draw and explain each block of generalized physiological Measurement	07
	<b>(b)</b>	System of human body.  List the quality of transducers so it will prefer in Biological parameter measurements. Why noncontact approach of measurement is best suited in medical science? Describe its reasons with proper arguments.	07
Q.2	(a)	List the error which accounted in physiological parameter measurement.	07
	<b>(b)</b>	Explain how it will nullify from the measurement.  Give the name of transducer with neat sketch and operation which will be used for muscular displacement monitoring.  OR	07
	<b>(b)</b>	Discuss the characteristic of bio-medical amplifier. Explain the operation, schematic and application of chopper stabilized amplifier.	07
Q.3	(a)	Which types of measurement will take place using strain gauge transducer? Explain one of the measurements with neat sketch, working and benefits.	07
(	<b>(b)</b>	What is fibrillation? Describe DC defibrillator in details.  OR	07
Q.3	(a)	What is the prime objective of Signal conditioning? Explain it briefly with engineering justification.	07
	<b>(b)</b>	How many noises will be considered in biological instrumentation? Explain each in details.	07
Q.4	(a)	Draw and describe the function of human heart. Obtain and draw its electrical activity on graph.	07
	<b>(b)</b>	Enlist the safety procedure required in Operating room  OR	07
Q.4	(a)	Give overview of clinical instrumentation. Explain with schematic, working and limitation of Blood cell counter.	07
	<b>(b)</b>	How optics is useful in biomedical field? Discuss the working and application of Spectrophotometer in details.	07
Q.5	(a)	Differentiate ICU versus ICCU equipment. Give the explanation of patient monitoring system for 8 bed unit.	07
	<b>(b)</b>	Draw and describe Ultrasonic blood pressure measurement with neat sketch, operation, benefits and limitation.  OR	07
Q.5	(a)	List the properties of ultrasound energy which make it best suitable for medical	07
	<b>(b)</b>	diagnosis. Describe Doppler based blood flow meter Explain Multichannel EEG recording system.	07

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