Seat No.:	Enrolment No.

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

## **BE - SEMESTER-VII EXAMINATION - SUMMER 2016**

Su Tii	bject me:0 truction 1.	t Code:171705  t Name:Instrumentation for Bio Medical Application (Department Elective - 12:30 PM to 05:00 PM  Total Marks: ons:  Attempt all questions.  Make suitable assumptions wherever necessary.  Figures to the right indicate full marks.	I)
Q.1	(a) (b)	Draw and explain respiratory system of the human body.  What is bio-potential? Explain different types of bio-potential electrodes for physiological parameter monitoring.	07 07
Q.2	(a) (b)	Enlist the ideal characteristics of bioelectric amplifier. Discuss the chopper stabilized amplifier with necessary circuit diagram.  Discuss different sources of noise in the measurement. Also discuss different noise reduction strategies.	07
	<b>(b)</b>	<b>OR</b> What is heart sound? Explain the system for measuring and recording the heart sound.	07
Q.3	(a)	Draw and explain electro-conduction system of the heart. Also discuss related heart problems.	07
<b>(b</b> )	<b>(b)</b>	Explain any one of the indirect method for blood pressure measurement. <b>OR</b>	07
Q.3	(a) (b)	Draw ECG waveform. Explain the block-diagram of ECG machine. Explain Electromagnetic type blood flow meter.	07 07
Q.4	(a) (b)	Define different parameters related to lung volumes and capacities. Explain the Spirometer instrument in detail.  Discuss the mechanism of artificial mechanical ventilation.	07
	(~)	OR	
Q.4	(a) (b)	Discuss the structure and function of different types of nervous system.  Draw EEG waveform. Explain the block-diagram of EEG machine.	07 07
Q.5	(a)	Discuss the importance and structure of ICU. Also explain the functions of bedside monitors.	07
	<b>(b)</b>	Explain the blood cell counter and its significance in pathological laboratory.  OR	07
Q.5	(a)	What is renal failure? Explain the detailed block diagram of hemodialysis machine.	07
	<b>(b)</b>	Explain different scan modes and scanning systems of medical ultrasonography.	07
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