Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2160301 **Date:06/05/2016**

Subject Name: Diagnostic 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.**

Q.1	**(a)**	Draw and explain block diagram of ECG machine. Design preamplifier circuit for ECG acquisition.	**07**
	(b)	Explain different lead configuration of ECG machine. Explain effects of artifacts on ECG recordings.	**07**
Q.2	**(a)**	Draw and explain block diagram of EEG machine. Explain 10-20 method of electrode placement.	**07**
	(b)	Enlist and explain any 5 neurological disorders diagnosed by EEG.	**07**
		OR	
	(b)	Explain photocardiography. Design phonocardiograph amplifier.	**07**
Q.3	**(a)**	Draw and explain block diagram of picoscale blood cell counter. Enlist and explain different errors in electronic counters.	**07**
	(b)	Explain basic water sealed spirometer with its drawbacks.	**07**
		OR	
Q.3	**(a)**	Explain ultrasonic spirometer. Derive the equation for flow velocity.	**07**
	(b)	Draw and explain analog signal processing circuitry of pulse oximetry. Enlist different physiological variables which affects the accuracy of SaO2 measurements.	**07**
Q.4	**(a)**	Draw and explain block diagram of flame photometer. Define various interferences occur in flame photometry.	**07**
	(b)	Explain the working of gas chromatograph with its schematic.	**07**
		OR	
Q.4	**(a)**	Explain endoscopy technique with its basic constructional diagram and various applications.	**07**
	(b)	Explain different optical filters used in spectrophotometer.	**07**
Q.5	**(a)**	Explain multichannel photometer in detail with its schematic diagram.	**07**
	(b)	Write a short note on tonometry technique.	**07**
		OR	
Q.5	**(a)**	Explain blood pCo2 electrode with constructional diagram.	**07**
	(b)	Explain auto analyzer.	**07**

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