

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE- SEMESTER-VI (NEW) EXAMINATION – WINTER 2024**

**Subject Code:3160301**

**Date:20-11-2024**

**Subject Name:Diagnostic Instrumentation**

**Time:02:30 PM TO 05:00 PM**

**Total Marks:70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		<b>Marks</b>
<b>Q.1</b>	(a) Enlist the applications of Telemedicine.	<b>03</b>
	(b) Describe PCG with heart sounds.	<b>04</b>
	(c) What is need of Isolation Pre-amplifier in ECG? Draw & explain Isolation Pre-amplifier in ECG.	<b>07</b>
<b>Q.2</b>	(a) What is Pneumotachometer? Explain working principle of Pneumotachometer.	<b>03</b>
	(b) Explain Cardiovascular system disorders.	<b>04</b>
	(c) Explain construction & working of Bedside Patient Monitoring system with neat diagram.	<b>07</b>
<b>OR</b>		
	(c) What is Cardiac Output? Enlist cardiac output measurement techniques and explain anyone.	<b>07</b>
<b>Q.3</b>	(a) Explain EEG signal with its amplitude & frequencies.	<b>03</b>
	(b) Define montage. Explain 10-20 electrode placement of EEG.	<b>04</b>
	(c) Describe Magnetoencephalograph in detail.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) What is NCV? How it can be measured?	<b>03</b>
	(b) Design Signal conditioning circuit for EMG.	<b>04</b>
	(c) Explain EEG machine with neat diagram.	<b>07</b>
<b>Q.4</b>	(a) Illustrate various Ocular disorders.	<b>03</b>
	(b) Write a short note on Electroretinography (ERG).	<b>04</b>
	(c) Explain Evoked Response Audiometry system with neat diagram.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Illustrate various Auditory disorders.	<b>03</b>
	(b) What is Audiometer? Describe its main types.	<b>04</b>
	(c) Explain Tonometry in detail.	<b>07</b>
<b>Q.5</b>	(a) Define Ventilation, Distribution & Diffusion in Pulmonary Function measurement.	<b>03</b>
	(b) What is Spirometer? Explain Basic water-sealed Spirometer with neat diagram.	<b>04</b>
	(c) Explain Multichannel wireless Telemetry system in detail.	<b>07</b>

**OR**

- Q.5** (a) Explain clinical data interchange/exchange standards. **03**  
(b) What is Biotelemetry? Explain wireless telemetry in brief. **04**  
(c) Draw & explain block diagram of Pulmonary Function Analyzer. **07**

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