

**GUJARAT TECHNOLOGICAL UNIVERSITY**

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

**Subject Code:3160303**

**Date:17-05-2024**

**Subject Name:Therapeutic 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.**
- 4. Simple and non-programmable scientific calculators are allowed.**

		MARKS
<b>Q.1</b>	(a) Explain types of Dialyzers.	<b>03</b>
	(b) Explain Three letter and Five letter code of Pacemaker.	<b>04</b>
	(c) Explain DC Defibrillator with circuit diagram.	<b>07</b>
<b>Q.2</b>	(a) Explain Asynchronous External Cardiac Pacemaker.	<b>03</b>
	(b) Explain different techniques of Electrosurgical Unit.	<b>04</b>
	(c) Explain Block diagram of Electrosurgical Unit.	<b>07</b>
<b>OR</b>		
	(c) Explain circuit diagram of Shortwave diathermy. Also explain its Application Methods.	<b>07</b>
<b>Q.3</b>	(a) Explain Pacer-Cardioverter Defibrillator.	<b>03</b>
	(b) Explain Safety Aspects of Electrosurgical Unit.	<b>04</b>
	(c) Explain Block diagram of Heart Lung Machine.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Explain Leads and Electrodes of Pacemaker.	<b>03</b>
	(b) Explain Different modes of Ventilator.	<b>04</b>
	(c) Explain schematic diagram of Anesthesia Machine.	<b>07</b>
<b>Q.4</b>	(a) Explain design of Infusion Pump.	<b>03</b>
	(b) Describe Ultrasound Therapy Unit in Detail.	<b>04</b>
	(c) Explain schematic diagram of Hemodialysis Machine.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Define Tidal Volume, Minute Volume, and Lung Compliance.	<b>03</b>
	(b) Explain Intra aortic balloon pump.	<b>04</b>
	(c) Explain Transcutaneous electrical nerve stimulation (TENS) and Deep brain stimulation.	<b>07</b>
<b>Q.5</b>	(a) Describe performance parameters of Hemodialysis Machine.	<b>03</b>
	(b) Explain Design of FES system.	<b>04</b>
	(c) Explain Microwave Diathermy with circuit diagram.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) Describe types of Electrodes of Defibrillator.	<b>03</b>
	(b) Explain circuit diagram of Temperature detector and control in Hemodialysis Machine.	<b>04</b>
	(c) Write classification of Ventilators. Explain Block diagram of Ventilator.	<b>07</b>

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