

**SARDAR PATEL UNIVERSITY**  
**Programme & Subject: M.Sc (Instrumentation & Control)**  
**Semester: IV**  
**Syllabus with effect from – December - 2016**

<b>Paper Code: PS04CINC01</b>	<b>Total Credit: 4</b>
<b>Title Of Paper: Medical Imaging Systems &amp; Therapeutic Equipments</b>	

Unit	Description in Detail	Weightage (%)
I	Basis of Diagnostic Radiology, X-Ray Machine, Visualization of X-Rays, Physical parameters for X-Ray Detectors, Computed Tomography Basic Principle & System Components	25%
II	Principle of NMR Imaging System, Image Reconstruction Techniques, NMR Components, Biological Effects & Advantages of NMR System, Pulse Echo System using Ultrasound, Real Time Ultrasonic Imaging System, Thermo-Graphic Equipment	25%
III	Cardiac Pacemakers, Types of Pacemakers, Types of Leads & Electrodes, Cardiac Defibrillator, DC Defibrillator with Synchronizer, Automatic Defibrillator, Principle of Surgical Diathermy, Surgical Diathermy Machine, Surgical Diathermy Analyzer	25%
IV	Types of Laser Applications in Biomedical, Short Wave Diathermy, Microwave Diathermy, Electrotherapy Haemodialysis Machine, Portable Kidney Machine, Lithotripter System, Modern Ventilator	25%

**Basic Text & Reference Books:-**

- Handbook of Biomedical Instrumentation, II-Edition, R. S. Khandpur, Tata McGraw-Hill.
- Biomedical Instrumentation and Measurements, Leslie Cromwell, Fred J. Weibell & Erich A. Pfeiffer, Prentice Hall of India.
- Introduction to Biomedical Instrumentation and Measurement Technology, Carr, Brown, Pearson Education.
- Medical Instrumentation Application and Design, III-Edition, John G. Webster-Editor, John Wiley & Sons, INC.
- Biomedical Transducers and Instruments, Tatsuo Togawa, Toshiyo Tamura & P. Ake Oberg, CRC Press.

