



**ELECTIVE - I**  
**Biomedical Instrumentation**  
**(New) (1252)**

**P. Pages : 2**

**Time : Three Hours**

**Max. Marks :100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any two** questions from each unit.
5. Assume suitable data if required.
6. Draw figures wherever required.
7. Black figures to the right indicate marks.

**UNIT - I**

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|----|---|----|
| 1. | Explain the process in which the magnetic moment is flipped.<br>Draw & give detailed working of the system. | 10 |
| 2. | Write in brief the biological effects & advantages of NMR imaging system.                                   | 10 |
| 3. | Explain in detail the generation & detection of ultrasound.   | 10 |

**UNIT - II**

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|----|---|----|
| 4. | Discuss the need for cardiac Pacemaker. Enlist types of the same.   | 10 |
| 5. | With the help of diagrams, explain types of implantable Pacemakers. | 10 |
| 6. | Draw & Discuss the Implantable defibrillator system architecture.   | 10 |

**UNIT - III**

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|----|---|----|
| 7. | Draw & explain the principle of surgical diathermy machine. | 10 |
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| 8. | Explain the principle of operation of Laser in detail. | 10 |
| 9. | Draw & explain the ultrasonic therapy unit.            | 10 |

**UNIT - IV**

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|-----|---|----|
| 10. | Illustrate working of & function of Kidneys.                | 10 |
| 11. | Give detailed account on classification of Ventilators.     | 10 |
| 12. | With the help of diagrams explain mechanics of respiration. | 10 |

**UNIT - V**

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|-----|---|----|
| 13. | Draw & explain various components of spectrophotometer. | 10 |
| 14. | Explain working of implantable infusion system.         | 10 |
| 15. | Draw & explain the working of multichannel colorimeter. | 10 |

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