

**DR. B ABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,  
LONERE – RAIGAD – 402 103  
Winter Semester Examination – December – 2019**

**Branch: M.Tech. (Electronics Engineering)**  
**Subject:- Medical Electronics (MTEEE114B)**  
**Date:- 19/12/2019**

**Semester: I**  
**Marks: 60**  
**Time: 3 Hrs.**

**Instructions to the Students**

1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

- |  | <b>(Marks)</b> |
|--|----------------|
| <b>Q.1</b> a) Explain the classification of Medical Equipments   | <b>(6)</b>     |
| b) Describe operation of X-ray Machine with Block Diagram  | <b>(6)</b>     |
| <b>Q.2</b> a) What is mean by resting and action potential? Explain action potential waveform          | <b>(6)</b>     |
| b) Explain different Electrodes used for ECG Measurement   | <b>(6)</b>     |
| <b>Q.3</b> a) Explain Performance characteristics of Transducers used for biomedical application       | <b>(6)</b>     |
| b).List two diagnostic, two therapeutic and two clinical laboratory equipments with their applications | <b>(6)</b>     |
| <b>Q.4</b> a) Explain with the help of block diagram major building blocks of EEG Machine              | <b>(6)</b>     |



b) Explain the operation of Pacemaker and why it is needed? (6)

**Q.5** a) What is the need of a Cardiac defibrillator? Explain with the help of block diagram (6)

b) Describe the different technique used to calculate Heart rate (6)

**Q.6** a) What are special design consideration for medical equipments from safety point of view (6)

b) Distinguish between Gross shock and Micro current shock, Explain the effect of electric current on the human body (6)

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