

F 3341

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, NOVEMBER 2014**

**Seventh Semester**

Branch—Applied Electronics and Instrumentation / Electronics and Instrumentation /  
Instrumentation and Control Engineering

AI 010 703 / EI 010 703 / IC 010 703—BIOMEDICAL INSTRUMENTATION (AI, EI, IC)  
(New Scheme 2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.  
Each question carries 3 marks.*

1. What is meant by action and resting potentials ?
2. Discuss about the importance of Einthoven triangle.
3. What is meant by expiratory reserve volume ?
4. Discuss about the external defibrillator.
5. Discuss about collimator.



(5 × 3 = 15 marks)

**Part B**

*Answer all questions.  
Each question carries 5 marks.*

6. Discuss in detail about any *two* transducers used for biological applications.
7. Write short notes on motion artifacts.
8. What is EEG ? List the various characteristic frequencies in EEG and relate it to the condition of the person.
9. List the various effects of electrical current that occur with the increasing current density. Why electrical surgical unit does not cause on electrical shock under normal use ?
10. Briefly discuss about medical imaging ?

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.  
Each question carries 12 marks.*

11. With the help of a block diagram explain in detail about the basic components of man-instrument system.

Or

**Turn over**

12. Explain how electrodes are classified. Write a note on practical hints for using them.  
13. Discuss in detail about the electrodes and leads of electrocardiogram.

Or

14. Discuss in detail about the principle and clinical application of phonocardiography.  
15. Explain the principle and operation of spirometer.

Or

16. Write short notes on :

(a) Lead system in EEG.

(5 marks)

(b) Evoked potential.

(4 marks)

(c) Clinical application of EEG.

(3 marks)

17. Explain in detail about the physiological effects of electricity.

Or

18. Explain the operation of a ventilator.

19. Explain in detail about NMR instrumentation and imaging system.

Or

20. Write short notes on :

(a) Detectors.

(4 marks)

(b) Larmor frequency.

(4 marks)

(c) Free induction decay.

(4 marks)

[5 × 12 = 60 marks]

