

B.TECH. DEGREE EXAMINATION, MAY 2014**Seventh Semester**

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

AI 01 0703/EI 01 0703/IC 01 0703—BIOMEDICAL INSTRUMENTATION (AI, EI, IC)

(Improvement/Supplementary—2010 Admissions)

Time : Three Hours

Maximum : 100

Part A

*All questions are compulsory.
Each question carries 3 marks.*

1. Define absolute refractory period and relative refractory period.
2. Enumerate the normal values for amplitude and durations of important ECG parameters.
3. What is EEG? What are its features?
4. How electric current can affect the tissues?
5. What is meant by Larmor frequency?

(5 × 3 = 15 marks)

Part B

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

6. Discuss about the different types of electrodes.
7. Explain about phonocardiography and its clinical applications.
8. Explain about the important respiratory parameters.
9. Define microshock standards.
10. Enumerate the advantages and disadvantages of NMR imaging systems.

(5 × 5 = 25 marks)

Part C

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

11. What is Biopotential? Draw the waveform of action potential, explain in detail.

Or

12. Explain in detail about the transducers used for biological applications like flow, pulse and respiration.

Turn over



13. (a) Discuss about the normal wave pattern of ECG. (5 marks)
(b) Discuss about the different problems of a patient that can be diagnosed by ECG. (7 marks)

Or

14. (a) Explain in detail about the biopotential recording. (6 marks)
(b) Discuss about Cardiovascular circulation. (6 marks)
15. (a) Explain about the mechanism of breathing. (6 marks)
(b) Write short notes on :
(i) Hypoventilation.
(ii) Hypercapnia.
(iii) Diaphragm.

(6 marks)

Or

16. Explain the operation of the EEG machine. (12 marks)
17. Explain the operation of dialysis machine. (12 marks)

Or

18. Write short notes on electrical hazards and electrical accident prevention in a hospital. (12 marks)
19. Explain in detail about the Computer Tomography. (12 marks)

Or

20. Write short notes on :
(i) X-ray tubes. (4 marks)
(ii) Collimators. (4 marks)
(iii) NMR imaging systems. (4 marks)

[5 × 12 = 60 marks]

