

F 3471

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Seventh Semester

Branch : Applied Electronics and Instrumentation/Electronics and
Instrumentation Engineering

BIOMEDICAL INSTRUMENTATION (AS)

(Old Scheme—Prior to 2010 Admissions)

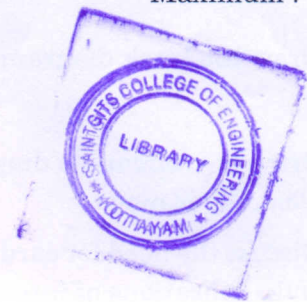
[Supplementary/Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions.
Each question carries 4 marks.*



1. What is EMG ? Explain with wave forms.
2. Distinguish between micro and macro shock hazards.
3. Write notes on electrodes for stimulation.
4. Explain with diagram the pulse transducer.
5. Explain how the conduction velocity and latency of a nerve cell determined.
6. Explain with figure the UV recorder. What are the precautions to be taken in biopotential recording ?
7. Draw the block diagram of an ERG machine and explain.
8. Explain principle of works of a pulse monitor.
9. Explain any one type of nerve stimulator with uses.
10. Describe the short wave diathermy with uses.

(10 × 4 = 40 marks)

Part B

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

11. (a) Explain with diagram the cardiovascular system. (8 marks)
(b) Write notes on electrical safety codes. (4 marks)
- Or*
12. (a) Explain EEG with the frequency bands waveforms and uses. (6 marks)
(b) What are biopotentials ? Explain how the action potentials are generated and propagated. (6 marks)

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13. Describe in detail with diagrams different types of biopotential electrodes with applications.

Or

14. (a) Define active and passive transducers with examples of biological transducer. (4 marks)

(b) Describe the theory of electrode – skin interface. Also draw the equivalent circuit of electrode a – skin interface and explain. (8 marks)

15. Explain in detail the 12 lead system of ECG measurement with the clinical application.

Or

16. (a) Draw the circuit of an EEG amplifier and explain. (6 marks)

(b) Describe the principle of operation and clinical applications of phonocardiography. (6 marks)

17. Draw the block diagram of a gas analyzer and explain with applications.

Or

18. Draw the schematic diagram of an ECG machine and explain with waveforms. Also explain how diagnosis is made.

19. Discuss the need for cardiac pacemakers. Explain in detail with diagrams the principle of operation and applications of internal and external pacemakers. Compare them.

Or

20. Draw the block diagram of a heart-lung machine and explain with uses.

[5 × 12 = 60 marks]

