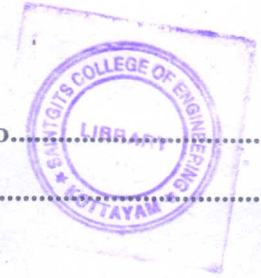


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Reg. No.

Name.....



B.TECH. DEGREE EXAMINATION, MAY 2015

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)

[Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. State four applications of medical instrumentation system.
2. Name the parameters that dictate transducer capability.
3. Give the different types of surface electrodes.
4. What are the methods of measurement involved in blood pressure measurement ?
5. What is photolithesmography ?

(5 × 3 = 15 marks)

Part B

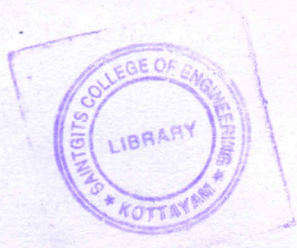
Answer all questions.

Each question carries 5 marks.

6. Describe the electrical activity of the cell.
7. Mention the effects of artifacts in ECG recording.
8. Define the terms :
 - (a) Total volume.
 - (b) Expiratory reserve volume.
 - (c) Inspiratory reserve volume.
 - (d) Total lung capacity.
9. Discuss the functionality of ventilators.
10. Explain the principle of magnetic resonance imaging.

(5 × 5 = 25 marks)

Turn over

**Part C**

Answer all questions.

Each question carries 12 marks.

11. Explain the different types of biopotential transducers with example.

Or

12. (a) Explain the theory of electrode-skin interface. (8 marks)

- (b) Distinguish between polarizable and non-polarizable electrodes. (4 marks)

13. Explain the different biomedical biopotential transducers with examples.

Or

14. Enumerate the electrophysiology of the heart.

15. Explain the working of a spirometer. What are their applications ?

Or

16. (a) Explain the working principle of EEG. (4 marks)

- (b) Explain the EEG waveform for different conditions of the brain in sleep stage. (8 marks)

17. (a) Explain the physiological effects due to electric currents. (6 marks)

- (b) Explain in detail the electrical safety codes and standards for electromedical equipments. (6 marks)

Or

18. Explain the basic principle of operation of computed tomography with a neat diagram.

19. Write a note on :

(a) Dialyzer.

(b) Pacemaker.

(c) Ultrasound diathermy equipment.

Or

20. Write short notes on :

(a) Collimeters and detectors.

(b) Scanning motions.

(5 × 12 = 60 marks)