

B.TECH. DEGREE EXAMINATION, DECEMBER 2012**Seventh Semester**

Branch : Electronics and Communication Engineering

BIOMEDICAL ENGINEERING (Elective I) (L)

(Regular / Supplementary / Mercy Chance)

Time : Three Hours

Maximum : 100 Marks

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

1. Explain EEG with its basic frequency bands.
2. Explain the electro conduction of heart.
3. Explain with figure the spirometer with its uses.
4. Define : (a) Tidal volume ; (b) Inspiratory Reserve Volume ; (c) Expiratory Reserve Volume ; and (d) Total Lung Capacity.
5. Explain the principle of echo cardiography.
6. Explain the phased array scanners with their uses.
7. Draw the block diagram of an X-ray Machine and briefly explain.
8. Explain X-ray films with its uses.
9. Describe the need for grounding instruments and the isolation of patients from the measurement system.
10. Draw the block diagram of a telemetry system and explain.

(10 × 4 = 40 marks)

Part B*Each question carries 12 marks.*

11. (a) Explain ECG with the waveforms.
(b) Explain with figure the Central Nervous System.

(5 + 7 = 12 marks)

*Or***Turn over**

12. What are bioelectric potentials? Explain how the action potentials are generated and propagated. Also draw the action potential waveform and explain.

(12 marks)

13. Draw the block diagram of an ECG recorder and explain each component in detail.

(12 marks)

Or

14. Explain any *three* types of direct method of pressure measurement in detail.

(12 marks)

15. Explain with the block diagram the basic pulse-echo system with its uses.

(12 marks)

Or

16. (a) Explain with diagram the principle of ultrasonic imaging.

(b) Explain how blood flow is measured using ultrasound.

(6 + 6 = 12 marks)

17. (a) Explain the principle of generation of X-rays.

(b) Explain fluoroscopy with its applications.

(8 + 4 = 12 marks)

Or

18. Describe with block schematic, the CAT scanner with its applications.

(12 marks)

19. (a) What is meant by let-go current? Explain.

(b) Explain with diagram the Bedside Monitors.

(4 + 8 = 12 marks)

20. Explain with diagram any *three* types of Dialyzers. Compare their performance.

(12 marks)

[5 × 12 = 60 marks]