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Question Paper Code : 80527

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Sixth/Seventh Semester

Electrical and Electronics Engineering

EI 2311/ EI 65/10133 EI 606 — BIOMEDICAL INSTRUMENTATION

(Common to Instrumentation and Control Engineering and Electronics and
Instrumentation Engineering)

(Regulations 2008/2010)

(Also Common to PTEI 2311 – Biomedical Instrumentation for B.E. (Part-Time)
Fifth Semester – EEE – Regulations 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate action potential and resting potential.
2. What are the components of a biomedical system?
3. List the various types of electrodes.
4. What is preamplifier?
5. Define pH.
6. List the basic types of measurements made in pulmonary clinic.
7. What is cardiac output?
8. Define korotkoff sound?
9. Name few tests performed using audiometer.
10. What is lithotripsy?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the temperature measurement using fiber optic transducer. (8)
- (ii) Comment on various selection criteria for choosing a transducer for measurement. (8)

Or

- (b) (i) Draw the cell potential waveform and explain the various potentials that constitute cell mechanism. (8)
- (ii) Describe in detail the working of a piezoelectric transducer and its biomedical applications. (8)
12. (a) Explain the working of Chopper amplifier. Mention their importance in biomedical instrumentation.

Or

- (b) Explain how the electrical hazards protection can be provided in the biomedical instrumentation systems.
13. (a) (i) Explain the Rheographic method of blood pressure measurement. (8)
- (ii) Explain with functional diagram, the working of spirometer. (8)

Or

- (b) (i) Explain the measurement methods of Galvanic skin response (GSR) and Basal Skin Resistance (BSR). (8)
- (ii) Explain in detail with neat diagram, differential auscultatory technique of blood pressure measurement. (8)
14. (a) Explain the construction and working principle of computer tomography. (16)

Or

- (b) (i) Explain in detail the block diagram of Gamma camera. (8)
- (ii) Draw and explain the working of multichannel biotelemetry system. (8)

15. (a) With a block diagram of a ventilator along with its accessories, explain its functioning. (16)

Or

- (b) (i) With a block diagram of automatic audiometer, explain its measurement procedure. (10)
- (ii) Write notes on nerve and muscle stimulates. (6)
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