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**Question Paper Code : 20530**

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Eighth Semester

Electronics and Instrumentation Engineering

EI 8073 — BIOMEDICAL INSTRUMENTATION

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

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the principle of ultrasonic temperature transducer?
2. Define Goldman's equation and Nernst equation of resting potential.
3. Classify the different types of plethysmographs.
4. List out the indirect blood pressure measurement techniques.
5. What are the basic measures to be taken to protect from shock?
6. Name the different types of electrodes used in EEG and EMG.
7. Give the block diagram of a bio-telemetry system.
8. What is meant by endoscopy?
9. Define defibrillator.
10. What is meant by dialyzers?

PART B — (5 × 13 = 65 marks)

11. (a) With a neat diagram explain the cardiovascular systems in detail.

Or

- (b) Explain in detail about the block diagram of a biomedical instrumentation system.

12. (a) Draw the block diagram of automated electro sphygmomanometer for blood pressure measurement and explain its operation.

Or

- (b) Explain in detail with a neat block diagram of complete blood gas analyzer.
13. (a) Discuss the different types of electrodes used in the measurement of bio potential with neat diagram.

Or

- (b) Draw the block diagram of a recording setup of EEG and explain the different parts.
14. (a) With a neat diagram explain the retinal imaging in biometric systems.

Or

- (b) (i) What is the basic principle of computer tomography? Explain it in detail. (7)
- (ii) Write a short notes on CT number scale used in CT. (6)
15. (a) With a neat diagram explain the working principle of heart lung machine.

Or

- (b) With a block diagram explain in detail about automatic audiometer.

PART C — (1 × 15 = 15 marks)

16. (a) Explain in detail about the instruments for checking the safety parameters of biomedical equipment.

Or

- (b) Explain in detail about robotic surgery for orthopedic prostheses fixation.