

Reg. No.

Question Paper Code

11770

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Eighth Semester

Electronics and Instrumentation Engineering

(Common to Instrumentation and Control Engineering)

EI8073 - BIOMEDICAL INSTRUMENTATION

(Regulations 2017)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|--|-------------------------------|
| 1. What is synapse? | 2,K2,CO1 |
| 2. Draw the structure of cell. | 2,K1,CO1 |
| 3. State the Principle behind the Rheographic method of blood pressure measuring instrument. | 2,K1,CO2 |
| 4. What is the output of GSR sensor? | 2,K2,CO2 |
| 5. List the different types of Surface electrodes. | 2,K1,CO3 |
| 6. Define the term latency in EMG. | 2,K1,CO3 |
| 7. Classify the Endo microscopes. | 2,K2,CO4 |
| 8. What is meant by CT Number? | 2,K2,CO4 |
| 9. List the applications of diathermy. | 2,K1,CO5 |
| 10. What are the three types of dialyzer membrane? | 2,K2,CO5 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Discuss the development of Acting, Resting potential and muscular contraction. 13, K2,CO1

OR

- b) Explain the operation of any two types of physiological transducers with relevant sketches. What are the different selection criteria of physiological transducer? 13,K2,CO1

12. a) Explain in detail about the Cardiac measurements with the neat diagram of PR, ST, QT intervals. 13,K2,CO2

OR

- b) Explain in detail about the blood gas analyzer designed to measure pH, pCO₂, pO₂ from a sample. 13,K2,CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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13. a) Explain with circuit diagram the operational amplifier based chopper amplifier to process biological signals. 13,K2,CO3

OR

- b) Describe in detail the principle involved for Lead systems and electrodes used for measurement of ECG, EMG. 13,K2,CO3

14. a) Explain the working of Radiography and Fluoroscopy in detail. 13,K2,CO4

OR

- b) Explain the working principle of multichannel biotelemetry system with its basic components. 13,K2,CO4

15. a) Explain the working principle of DC defibrillator with neat block diagram. 13,K2,CO5

OR

- b) Explain in detail about the ICCU patient monitoring system in detail. 13,K2,CO5

PART - C (1 × 15 = 15 Marks)

16. a) Examine the use of Nano robots for surgery applications for the disorder of human physiological system. 15,K3,CO5

OR

- b) Examine the use of a heart-lung machine during a typical cardiac surgery. 15,K3,CO5