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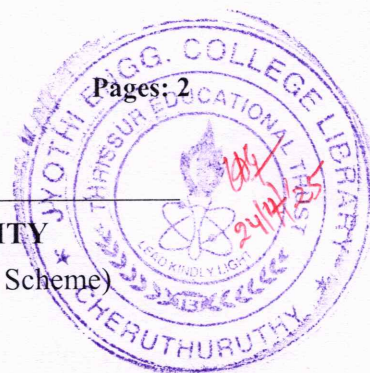
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Reg No.: _____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (R,S) / S6 (PT) (R,S) Exam April 2025 (2019 Scheme)



Course Code: ECT414

Course Name: BIOMEDICAL ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|----|---|-----|
| 1 | Illustrate the need of biopotential amplifiers. | (3) |
| 2 | List the examples of different Bioelectric potentials | (3) |
| 3 | What is Korotkoff's sound in blood pressure measurement | (3) |
| 4 | Draw & label the ECG of a person with a healthy heart. | (3) |
| 5 | List any three application of EMG signals in biomedical instrumentation | (3) |
| 6 | Explain the Physiology of respiratory system | (3) |
| 7 | Explain the application of telemetry in medicine. | (3) |
| 8 | List three instruments used for clinical laboratory with their use. | (3) |
| 9 | What is the advantage of CT imaging over X-ray imaging? | (3) |
| 10 | Draw the block diagram of a NMR machine. | (3) |

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

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|----|---|-----|
| 11 | a) What is Bioelectric Potential? Explain it with necessary illustrations. | (8) |
| | b) Draw and explain the basic block diagram of a Biomedical instrumentation system. | (6) |

OR

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|----|---|------|
| 12 | a) Explain Nernst relation with respect to bio potentials. | (4) |
| | b) What are Bio Potential Amplifiers? Briefly explain its different types | (10) |

Module II

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| 13 | a) Explain the 12 lead systems used for the measurement of ECG | (10) |
| | b) Compare Direct & Indirect Blood pressure measurement | (4) |

OR

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|----|--|-----|
| 14 | a) Illustrate the working of electromagnetic blood flow meter. | (7) |
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- b) Explain any one method for the measurement of blood pressure with necessary diagrams. (7)

Module III

- 15 a) Explain the 10-20 electrode system for EEG measurement with necessary diagrams. (10)
b) Explain the myoelectric control system with block diagram (4)

OR

- 16 a) Explain the EMG measurement using block diagram. (6)
b) Illustrate how respiratory parameters are measured with a body plethysmograph. (8)

Module IV

- 17 a) Explain the basic working of a Dialyzer. (6)
b) Describe the working of a pacemaker with block diagram (8)

OR

- 18 a) Explain the working of spectrophotometer with necessary illustrations. (7)
b) Illustrate the working principle of a blood cell counter. (7)

Module V

- 19 a) Describe the working of ultrasonic imaging system with diagram and explain the different types of displays used in it (10)
b) List the applications of X-rays in biomedical imaging. (4)

OR

- 20 a) Explain the basic components associated with NMR imaging with necessary illustrations (7)
b) What are the sources of electrical hazards in hospitals? (7)
