

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: MR463

Course Name: Bio Mechatronics

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.

| | | Marks |
|---|--|-------|
| 1 | Differentiate between the action potential and resting potential in human body | (5) |
| 2 | List out some passive transducer used in medical field | (5) |
| 3 | With a block diagram elucidate the working of single channel telemetry system | (5) |
| 4 | Write note on: | |
| | (a) ECG amplifier and | (2) |
| | (b) ECG recorder. | (3) |
| 5 | Discuss the laser principle. | (5) |
| 6 | Describe the various applications of lasers in different fields of medicine | (5) |
| 7 | Discuss about ECG analysis in medical applications | (5) |
| 8 | Describe time and frequency domain circuit | (5) |

PART B

Answer any three full questions, each carries 10 marks.

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|----|--|------|
| 9 | Illustrate the recording setup of ECG with respective block diagram | (10) |
| 10 | Classify the active transducers is being used in biomedical instrumentation and write a short note on it | (10) |
| 11 | Compare the working of capacitance manometer with strain gauge | (10) |
| 12 | Compare differential amplifier and power amplifier circuits | (10) |
| 13 | Draw the schematic diagram of the magnetic flow meter for blood flow measurement and explain its working | (10) |

PART C

Answer any two full questions, each carries 15 marks.

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| 14 | (a) What is meant by CT ? | (2) |
| | (b) Draw the block diagram of a CT and explain the different blocks in it. | (10) |

- (c) What are the applications of CT in medicine? (3)
- 15 (a) Define Biotelemetry (5)
- (b) Sketch a telemetry circuit to transmit ECG signals in a reliable manner (10)
- 16 (a) Discuss about interfacing of the computer with medical instrumentation (6)
- (b) Write a short note on Microprocessors in Biomedical Instrumentation. (6)
- (c) Discuss about Digital computer in the clinical laboratory. (3)
- 17 (a) Discuss the importance of digital computers in biomedical field (3)
- (b) Describe about digital filtering data reduction techniques (12)
