

Reg No.: _____

Name: _____

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

Course Code: EC482
Course Name: BIOMEDICAL ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

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| 1 | a) Explain about bio-medical instrumentation system with necessary block diagram. | (7) |
| | b) Illustrate with necessary diagram how action potential is generated in human body and write the Nernst equation for bioelectric potential. | (8) |
| 2 | a) Describe the cardiovascular system of human body system. | (8) |
| | b) Suggest an instrumentation system for the measurement of blood flow by using the electromagnetic principle. | (7) |
| 3 | a) Explain the construction and working principle of chopper amplifier. Mention its advantages. | (7) |
| | b) Illustrate the working of ultrasonic blood flow meter with diagram. | (8) |

PART B

Answer any two full questions, each carries 15 marks.

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| 4 | a) With neat graph, explain any six respiratory parameters. | (9) |
| | b) Draw the lead system used for measuring electrical activity of brain. | (6) |
| 5 | a) What is a ventilator? Describe the working of ventilator with a neat sketch. | (10) |
| | b) What is fibrillation? How it can be treated? | (5) |
| 6 | a) By commenting on pH value of blood, explain an instrumentation system for measuring pH value of blood. | (8) |
| | b) Draw the block diagram of a short wave diathermy unit and explain its working. | (7) |

PART C

Answer any two full questions, each carries 20 marks.

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| 7 | a) Explain the working of X-ray imaging system with diagram. | (10) |
| | b) Explain the image reconstruction procedure in CT. | (10) |
| 8 | a) Draw the block diagram of MRI system and explain the image reconstruction method. | (10) |
| | b) Explain single channel telemetry system for ECG. | (10) |
| 9 | a) List the applications of ultrasound in medicine. | (6) |
| | b) With circuit diagram, explain any two methods for reducing electric shock hazards. | (8) |
| | c) Explain different scanning modes used in ultrasound imaging. | (6) |
