

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth semester B.Tech degree examinations, September 2020

Course Code: EC482**Course Name: Biomedical Engineering**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer any two full questions, each carries 15 marks.*

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|---|--|-------|
| 1 | a) Explain the generation of bioelectric potential in cells with illustration. Write the Nernst equation for resting membrane potential. | (7) |
| | b) Describe the working of heart and circulatory system with suitable diagrams. | (8) |
| 2 | a) Explain the working of an isolation amplifier with illustration | (7) |
| | b) With the help of a block diagram explain the working of an ECG machine. | (8) |
| 3 | a) Explain auscultatory method for blood pressure measurement with diagrams. | (6) |
| | b) Demonstrate any two methods used to measure blood flow in blood vessels. | (9) |

PART B*Answer any two full questions, each carries 15 marks.*

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|---|---|-----|
| 4 | a) Illustrate and describe 10-20 system of electrode placement to perform EEG analysis. Also write the classification of EEG frequency bands. | (9) |
| | b) Explain an instrumentation system for EMG recording with suitable diagrams. | (6) |
| 5 | a) List any four respiratory parameters with definition. Describe the working principle of spirometer for respiratory volume measurement. | (8) |
| | b) With the help of a block schematic explain the working of cardiac pacemaker. | (7) |
| 6 | a) What is artificial ventilation? Explain modern ventilator with illustration. | (7) |
| | b) Describe heart-lung machine with its block diagram. | (8) |

PART C*Answer any two full questions, each carries 20 marks.*

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| 7 | a) Explain the working of X ray machine with illustration. List the applications of X-ray imaging. | (10) |
| | b) Describe the principle of Computed Tomography (CT) scan system with neat block diagram. | (10) |
| 8 | a) Explain the principle of Ultrasonic Imaging with suitable diagrams. Also list its applications. | (10) |
| | b) What is the principle behind MRI imaging? Explain the explain the various components of MRI system with necessary illustration. | (10) |
| 9 | a) Explain the basic components of biotelemetry system with its block diagram. Also write its applications | (10) |
| | b) Describe Macro and Micro shock hazards. | (10) |
