

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree (S,FE) Examination January 2022 (2015 Scheme)

Course Code: EC365**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) | Draw and explain the block diagram of a medical instrumentation system. | (10) |
| | b) | Explain the basic concept of ultrasonic blood flow meter. | (5) |
| 2 | a) | Explain Einthoven lead system used to record ECG. | (10) |
| | b) | Explain formation of potential in half cell . | (5) |
| 3 | a) | With neat diagram of the Korotkoff sounds explain how auscultatory method is used to measure blood pressure. | (10) |
| | b) | Write short note on
(i) ECG (ii) EMG | (5) |

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

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| 4 | a) | Draw and explain the block diagram of an EEG machine. | (10) |
| | b) | Explain the basic working of spirometer. | (5) |
| 5 | a) | What is oximetry. Explain the working principle of pulse oximeter. | (10) |
| | b) | Describe the working of positive pressure ventilator. | (5) |
| 6 | a) | What are pacemakers? How are they classified? Explain the types of implanted pacemaker depending on the pacing modes. | (10) |
| | b) | Explain the working principle of flame photometer. | (5) |

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

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| 7 | a) | Explain the working principle of computed tomography (CT). With an example explain how images are reconstructed in CT. | (10) |
| | b) | How can we minimize electric shock hazards caused to human body? | (3) |
| | c) | Describe the image acquisition and reconstruction techniques in MRI. | (7) |

- 8 a) What are the biological effects and advantages of NMR imaging system? (10)
- b) Compare A-mode, B-mode and M-mode displays in ultrasonic imaging system (10)
with any one application for each.
- 9 a) Draw the block diagram and explain the single channel telemetry system for (10)
ECG and temperature.
- b) What are leakage currents? How are they classified? (10)