

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (S, FE) / S5 (PT) (S,FE) Examination June 2024 (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

- 1 a) Explain the major components of a biomedical instrumentation system with suitable block diagram. (7)
- b) Explain the following amplifiers used in clinical laboratory with suitable circuit diagram: i) chopper amplifier ii) Carrier amplifier (8)
- 2 a) Explain the construction of any two of the following with necessary illustrations: (8)
 - i) Microelectrodes ii) Skin surface electrodes iii) Needle electrodes
- b) Explain ECG lead configuration. (7)
- 3 a) Explain a method for direct blood pressure measurement. (8)
- b) How does an electromagnetic blood flow meter work? (7)

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

- 4 a) What is oximetry? Explain the working of an oximeter with a diagram. (8)
- b) Explain the 10-20 system for EEG electrodes? (7)
- 5 a) Define nerve conduction velocity and describe its significance in EMG measurements. (7)
- b) What is diathermy? With a neat block diagram, explain the working of surgical diathermy. (8)
- 6 a) With a suitable block diagram, explain the working of dialyzers. State the applications of dialyzers. (10)
- b) Explain the working principle of cardiac defibrillator. (5)

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

- 7 a) Explain the image reconstruction process in computed tomography (CT). State the advantages of CT over X-ray imaging. (10)

- b) Explain the pulse-echo system in ultrasonic imaging. List the applications of ultrasonic imaging (10)
- 8 a) Describe the working of X-ray machine. List the applications of X-ray imaging in medicine. (10)
- b) Explain the components of a biotelemetry system. List any three applications of telemetry in medicine. (10)
- 9 a) Suggest the most suited medical imaging technique for analysing human brain. Explain its working principle. (10)
- b) Define electric shock hazard. List the safety codes for electro medical equipment. (10)
