Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (S,FE) Examination December 2025 (2019 Scheme)

Course Code: EET312

Course Name: BIOMEDICAL INSTRUMENTATION

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks. Marks

1		What are the applications of needle electrodes?	(3)
2		Explain the problems encountered in biomedical measurements.	(3)
3		Explain the measurement of Cardiac output?	(3)
4		What is Phonocardiography?	(3)
5		Explain the 10-20 system of EEG electrodes placement	(3)
6		What are the applications of EEG waveforms?	(3)
7		What is ultrasonic image principle?	(3)
8		Explain Neuron Communication	(3)
9		Explain the mechanism of infant incubator	(3)
10		Enumerate the applications of robotics in medical field.	(3)

PART B

Answer one full question from each module, each carries 14 marks.

Module I

11	a)	With neat sketches explain the generation and propagation of action potential	(7)
	b)	Explain the anatomy of respiratory system with figure.	(7)

OR

12	a)	Write notes on surface electrodes	(4)
	b)	Explain the anatomy of cardiac system with figure	(10)

Module II

13	a)	Explain with diagram the Ultrasonic method of blood pressure measurement	(7)
	b)	Describe the method of blood flow measurement using electromagnetic blood flow meter	(7)

OR

14	a)	Explain Electro-conduction system of the heart with figure	(7)
	b)	Explain working of ECG machine with a neat block diagram.	(7)

Module III

15	a)	Draw and explain the block diagram of EEG machine	(7)
	b)	Draw the different EEG waveforms and state its frequency	(7)

OR

16	a)	Explain the terms tidal volume and vital capacity in breathing mechanism.	(7)
	b)	What is the purpose of measurement of nerve conduction velocity? How is it measured?	(7)

Module IV

17	a)	Explain the generation of X-rays and also mention its applications in biomedical engineering.	(10)
	b)	Which part of haemodialysis machine is called artificial kidney? Explain its structure.	(4)

OR

18	a)	Explain the principle of CAT scanning with diagram	(7)
	b)	Explain the principle of MRI scanning with diagram	(7)

Module V

19	a)	With neat block diagram explain the telemedicine system.	(8)
	b)	Discuss the need for ventilators.	(6)

OR

20	a)	With neat diagram explain the working of heart lung machine.	(8)
	b)	Explain the principle of spectrophotometer analysis.	(6)

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