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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree (R,S) Examination May 2024 (2019 Scheme)

Course Code: MRT428

Course Name: BIO MECHATRONICS

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1	Write short note on electrode electrolyte interface.	(3)
2	Define Half -cell potential? What are polarisable and non-polarisable electrodes?	(3)
3	Sketch a typical PQRST complex waveform with respect to ECG and explain.	(3)
4	Draw Einthoven triangle and explain how it is used in ECG measurement.	(3)
5	Explain the different stages of evoked potential.	(3)
6	Describe in detail about the electrical activity of brain.	(3)
7	What is the need of blood flow measurement?	(3)
8	Write a short note on phonocardiography.	(3)
9	Describe the concept of centralized patient monitoring system.	(3)
10	Write short note on patient safety when biomedical instruments are operated.	(3)

PART B

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

Module I

11		Give a detailed narration of different bio electrodes used for biomedical instrumentation.	(14)

OR

12	a)	With neat sketch explain in detail about the resting potential and action potential.	(8)

b) With relevant diagrams explain electrical activity of excitable cells in detail. (6)

Module II

13 a) Describe the standard 12 lead system and recording method of ECG. (14)

OR

14 Draw an ECG of a normal person, labelling the critical features and explain the working of an ECG machine. (14)

Module III

15 a) What are brain waves? Write notes on measurement of EEG with necessary block diagram. (14)

OR

16 a) With neat sketch. Explain electrode placement system of EEG. (9)

b) Explicate the different stages of sleep. (5)

Module IV

17 a) With relevant figure explain electromagnetic blood flow meter. (10)

b) Differentiate between heart sounds and heart murmurs. (4)

OR

18 a) Explain one method of blood flow measurement. Also explain vector cardiography with the help of neat diagram. (14)

Module V

19 a) Explain heart lung machine with the help of neat diagram. (10)

b) Explain the working of MRI scanner. (4)

OR

20 a) With the help of a block diagram explain artificial ventilator in detail. (10)

b) Write a short note on electrical shock hazards. (4)

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