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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (S) Examination September 2025 (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		**Differentiate between polarisable and non-polarisable electrodes.**	(3)
2		**Write short note on electrode electrolyte interface.**	(3)
3		**Explain the relevance of SA node in the function of Heart.**	(3)
4		**Sketch a typical PQRST complex waveform with respect to ECG.**	(3)
5		**List the different stages of sleep.**	(3)
6		**Explain about Evoked potentials.**	(3)
7		**What is the importance of artificial ventilation?**	(3)
8		**Differentiate between heart sounds and heart murmurs.**	(3)
9		**Write a short note on electrical shock hazards.**	(3)
10		**What is a defibrillator and how it ensures patient safety?**	(3)

PART B

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

Module I

11	a)	**With neat sketch explain in detail about the resting potential and action potential.**	(7)
	b)	**Describe the types of surface electrodes.**	(7)

OR

12	a)	**With neat sketch differentiate between animal cell and plant cell.**	(7)
	b)	**Explain refractory periods?**	(7)

Module II

13	a)	**Explain ECG leads with necessary figures.**	(7)
	b)	**Sketch and brief the function of Heart.**	(7)

OR

14	a)	**Write short note on Arrythymias.**	(7)
	b)	**What is a pace maker? Explain its types and functions.**	(7)

Module III

15 a) **Draw a figure showing how the electrodes are placed in a 10 – 20 system of placement of electrodes to perform the EEG analysis.** (7)

b) **Explain a brain wave. What are its characteristics?** (7)

OR

16 **Explain the block diagram of EEG machine. Also explain different stages of evoked potential.** (14)

Module IV

17 a) **With the help of neat diagram explain phonocardiography.** (7)

b) **What is the importance of artificial ventilation?** (7)

OR

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

Module V

19 a) **Explain the concept of centralized patient monitoring system.** (7)

b) **What is a CT scanner and how does it work?** (7)

OR

20 **Explain the heart lung machine with the help of neat diagram.** (14)

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