Reg. No. : | | | | | | | | | | | | |

# Question Paper Code: 1214395

B.E. / B.Tech. DEGREE EXAMINATIONS, NOV / DEC 2024
Fourth Semester
Biomedical Engineering
U20BM404 – BIO ELECTRIC PHYSIOLOGY AND CHEMICAL ANALYSIS
(Regulation 2020)

Time: Three Hours | Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. Define Ohm's law.

2. What are the main features of an ion channel?

3. How do you feel when you have arrhythmia?

4. Distinguish normal and abnormal cardiac rhythm.

5. Sketch a neuron synapse with parts.

6. Why did Hodgkin and Huxley use squid neurons?

7. Classify the electrochemical analysis.

8. List out the metal substitution reaction.

9. State the application of IMFET.

10. Write the principle of auto analyser.

PART – B (5 x 16 = 80 Marks)

11. (a) (i) Bring out the experimental verification of Ohm's Law. (12)

(ii) If the resistance of an electric iron is 50 Ω and a current of 3.2 A flows through the resistance. Find the voltage between two points. (4)

(OR)

(b) Describe about the Gibbs-Donnan membrane and its uses. (16)

12. (a) Explain the physiology of normal cardiac rhythm and its determinants. (16)

(OR)

(b) Describe the electro-physiology of antiarrhythmic drugs and State the mechanism of action of antiarrhythmic drugs. (16)

13. (a) Mention how short-term synaptic plasticity differs from long-term synaptic plasticity. (16)

(OR)

(b) Explain - Hodgkin and Huxley equations with related to neurons. (16)

14. (a) Discuss the features of Membrane electrode assembly with a neat sketch. (16)

(OR)

(b) Differentiate the electro chemical mechanisms of cathodic and anodic coupling reactions. (16)

15. (a) Write the understanding principle behind blood gas sensors. Add note on its application. (16)

(OR)

(b) State the Beer- Lambert law and write the methodology of UV-visible spectrophotometer with neat diagram. (16)

----- xxx -----