

Chapter 4 Homework – The Origin of Biopotentials

Answer the following questions with brief answers. Where appropriate give the amplitude and duration or rate for the physiologic signal.

1. Explain what an action potential sequence is for a single nerve cell.
Section 4.1 Active State $\Delta v \cong$ duration=
2. Explain the effect of volume conductor size on the magnitude and wave shape for measuring nerve potentials.
Section 4.2 Fig 4.8
3. Explain the most basic Reflex Arc in the body.
Section 4.3
4. What is the origin mechanism for the ENG? Where is it measured, how many volts, and what is the duration?
Section 4.4 Volt= ; msec = Fig. 4.8 Table 1.1
5. What is the origin mechanism for the EMG? Where is it measured, how many volts, and what is the duration?
Section 4.5 Volt= , msec= discharges per second=
6. Explain the cardiac action potential.
Section 4.6 & Fig. 4.13
7. Explain the propagation pathway of the contraction of the heart.
Fig 4.12
8. What is the origin mechanism for the ECG? Where is it measured, how many volts, and what is the duration?
Ventricular cell msec= Table 1.1 mVolt= , bandwidth= Hz
9. What is the origin mechanism for the ERG? Where is it measured, how many volts, and what is the duration?
Rods & cones Section 4.7 Fig 4.23 Volt= Table 1.1 Volt= , bandwidth= Hz
10. What is the origin mechanism for the EOG? Where is it measured, how many volts, and what is the duration?
Section 4.7 Table 1.1 Volt= , bandwidth= Hz
11. What is the origin mechanism for the EEG? Where is it measured, how many volts, and what is the duration?
Section 4.8 Brain surface, Volt= . Scalp, Volt= , bandwidth= Hz
Table 1.1 Volt= , bandwidth= Hz