

Solutions

2.1 Answer: C. Graded potentials sum at the axon hillock; crossing threshold there launches the spike. The other options do not satisfy the stated defining conditions.

2.2 Answer: C. Myelin enables saltatory conduction between nodes of Ranvier, speeding the impulse. Compare the exact process, design or evidence, rather than an associated keyword.

2.3 Use the worked case evidence to support a bounded claim and explain why a causal, universal or stronger claim needs additional evidence. The claim must fit the specific design and observed process.

3.1 Unchanged spike amplitude fits all-or-none action potentials. Firing rate can carry information about input strength, and more neurons may also be recruited. Separate spike amplitude from number of spikes per second and population activity. A diagram must label which quantity is plotted before being interpreted. Award B1 each (authored) for the interpretation, its reasoning, a relevant limitation/alternative and an appropriate check, up to four points. Accept a different justified answer satisfying these demands.