

Solutions

2.1 A The all-or-none principle applies to an individual action potential. Stimulus information can be encoded by frequency and recruitment. Myelination permits saltatory conduction between nodes rather than making ions move freely through myelin.

2.2 $\text{frequency} = \text{count} / \text{time} = 24 / 0.40 = 60 \text{ Hz}$.

2.3 False. A neurotransmitter diffuses across the synaptic cleft; an action potential does not jump intact through the liquid gap. Excitatory input does not guarantee the postsynaptic cell reaches threshold.

2.4 action potential. action potential means A brief propagating change in membrane potential.

3.1 60 and 30 Hz. Frequency is count per time; speed requires propagation distance and delay between locations. These are different measured quantities.