1. The all-or-none electrical signal that travels down an axon is the _____ potential.

   _____

2. The major inhibitory neurotransmitter in the adult brain is

   ☐ glutamate

   ☐ acetylcholine

   ☐ dopamine

   ☐ GABA

3. Which method typically offers the finest timing of neural activity among these choices?

   ☐ PET

   ☐ EEG

   ☐ structural MRI

   ☐ fMRI

4. With signal and noise distributions held fixed, a more liberal criterion increases both hit and false-alarm rates.

   ☐ True ☐ False

5. A stronger sustained input increases a neuron's firing rate. Which interpretation is best?

   ☐ Rate can change while individual spikes remain all-or-none

   ☐ Myelin must have disappeared

   ☐ Each spike must become taller

   ☐ All-or-none means firing rate cannot change

6. H.M. improved on a practised motor task while struggling to remember recent events. This most directly supports

   ☐ the hippocampus as the store for every memory

   ☐ a distinction between some forms of memory

   ☐ one undifferentiated memory system

   ☐ complete removal of all brain memory

7. Which statement about sleep is best supported?

   ☐ Circadian timing and sleep pressure are identical

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   ☐ Dreaming occurs only in REM

   ☐ Every sleep cycle has exactly the same duration

8. Under a Weber-law approximation, a 2 g addition is just noticeable on 100 g. What addition is predicted for 300 g in the same valid range?

   ☐ 6 g

   ☐ 300 g

   ☐ 2 g

   ☐ 4 g

9. A block has 100 signal-present and 100 signal-absent trials, with 40 false alarms. What is the false-alarm rate?

   ☐ 20%, using all 200 trials

   ☐ 80%, using 50 trials

   ☐ 50%, using the 80 correct responses

   ☐ 40%, using the 100 signal-absent trials

1. **action**

   An action potential is the all-or-none spike. In many neurons it begins at the axon initial segment near the cell body, where inputs influence whether threshold is reached.

2. **GABA**

   GABA is the standard answer for the adult brain; glutamate is the major excitatory transmitter. Effects still depend on receptors, ion conditions and circuits.

3. **EEG**

   EEG tracks scalp electrical potentials at millisecond resolution. fMRI and PET follow slower physiological signals; structural MRI mainly describes anatomy. EEG source localisation is harder than its timing measurement.

4. **True**

   True under the stated fixed-distribution model. Observing both rates rise in an actual study is compatible with a criterion shift, but does not establish that sensitivity is unchanged.

5. **Rate can change while individual spikes remain all-or-none**

   All-or-none concerns whether individual spikes occur, not a fixed number or timing of spikes.

6. **a distinction between some forms of memory**

   The dissociation supports different memory processes. His broader medial temporal damage prevents treating him as a pure isolated hippocampal lesion.

7. **N3 has prominent slow waves; vivid dreaming is common in REM**

   N3 is slow-wave sleep. REM commonly has vivid dreams, but dreams also occur in non-REM. Timing and sleep pressure are distinct influences.

8. **6 g**

   The ratio is $2/100 = 0.02$. Multiplying 300 g by 0.02 gives 6 g, conditional on the approximation and comparable testing conditions.

9. **40%, using the 100 signal-absent trials**

   False alarms are counted only among signal-absent opportunities: $40/100 = 40\%$. The 200-trial denominator answers a different question.

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