

Chapter 2 The Nervous System: Structure and Function

Essay/Short Answer

1. What are the structures of a neuron and what are their functions?

Ans: dendrite, receive messages from other neurons; soma, housing nucleus and maintaining cellular life processes; axon hillock, gateway to axon; axon relays messages to other neurons; terminal branches; makes contact with dendrites of other neurons.

Difficulty: Moderate

Factual

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2. What are the different kinds of glial cells and what do they do?

Ans: astrocyte, maintain constant chemical environment for neurons; microglia, resident immune system; oligodendrocyte, myelin in the CNS, Schwann cell, myelin in the PNS.

Difficulty: Moderate

Factual

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3. What is the difference between the functions of the sympathetic and parasympathetic nervous systems?

Ans: the sympathetic prepares the organism to expend energy in response to a crisis, fight-or-flight; the parasympathetic prepares the organism to store energy and heal or repair itself, rest-and-digest.

Difficulty: Moderate

Factual

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4. What was the nature of the disagreement between Camillo Golgi and Santiago Ramón y Cajal?

Ans: Golgi supported nerve net theory, that the nervous system was a physically interconnected system of cells. Cajal supported the neuron doctrine, that all neurons were physically separate cells.

Difficulty: Difficult

Conceptual

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5. How did MacLean envision the role of the limbic system?

Ans: MacLean used a neuroethological approach, believing its role was to facilitate play behavior, parental behavior, and the cry of infants on separation from their mothers.

Difficulty: Moderate

Conceptual

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