

1.4 Nervous system communication

Name: _____ Class: _____ Date: _____

Total: 12 marks

KEY WORDS neuron 神经元 • synapse 突触 • neurotransmitter 神经递质
• central nervous system 中枢神经系统

Objective

Explain communication in the nervous system and distinguish its main divisions.

You must be able to:

- trace a signal through a neuron and synapse
- explain the role of neurotransmitters
- distinguish central and peripheral nervous systems

1 Worked examples

■ Cross the gap

A neuron receives signals at dendrites and sends a signal along its axon. A **synapse** 突触 is the gap between neurons. **Neurotransmitters** 神经递质 carry a signal across it chemically.

The central nervous system is the brain and spinal cord. The peripheral nervous system is the nerves connecting it to the body. A reflex can be handled quickly through the spinal cord.

2 Practice

2.1 Define a synapse. [1]

2.2 State what carries a signal across a synapse. [1]

2.3 Explain why touching a hot surface can produce a quick reflex. [2]

3 Exam-style questions

3.1 Explain how a message passes from one neuron to another. [4]

3.2 Compare the central nervous system with the peripheral nervous system. [4]

Solutions

2.1

- The gap between two neurons.

2.2

- Neurotransmitters.

2.3

- The signal can be processed through the spinal cord.
- The hand moves before a slow conscious decision is needed.

3.1

- A signal travels along the first neuron's axon.
- It reaches the synapse.
- Neurotransmitters cross the gap chemically.
- The next neuron receives the message.

3.2

- The central nervous system includes brain and spinal cord.
- It processes and coordinates signals.
- The peripheral nervous system is the nerves outside it.
- It carries signals between the central system and the body.