

Nervous control: practice questions

6 questions • 17 marks • mark scheme at the back

For Cambridge IGCSE Biology 0610 (and 0970, which has the same content). **Supplement** is Extended content, only examined on Papers 2 and 4.

Name

Total / 17

1 Which parts of the body make up the central nervous system (CNS)? [1 mark]

- A. ☐ Nerves outside the brain and spinal cord
- B. ☐ The brain and the spinal cord
- C. ☐ Sensory and motor neurones
- D. ☐ The brain and the nerves of the eye

2 Name the type of neurone that: (a) carries impulses from a receptor to the CNS [1] (b) carries impulses from the CNS to an effector [1] (c) is found only inside the CNS and links the other two types [1] [3 marks]

3 A person touches a hot object and their hand moves away before they feel pain. (a) Name the type of effector that moves the hand. [1] (b) Describe the path taken by the impulses from the receptor in the skin to the effector. [3] (c) Explain why this response is useful. [1] [5 marks]

4 State two features of a reflex action. [2 marks]

Which sequence correctly describes the events at a synapse?

- A. ☐ neurotransmitter diffuses across the gap; neurotransmitter released from vesicles; neurotransmitter binds to receptor proteins; impulse starts in next neurone
- B. ☐ neurotransmitter released from vesicles; neurotransmitter diffuses across the gap; neurotransmitter binds to receptor proteins; impulse starts in next neurone
- C. ☐ neurotransmitter released from vesicles; neurotransmitter binds to receptor proteins; neurotransmitter diffuses across the gap; impulse starts in next neurone
- D. ☐ impulse starts in next neurone; neurotransmitter released from vesicles; neurotransmitter diffuses across the gap; neurotransmitter binds to receptor proteins

(a) State what is meant by a synapse. [1] (b) Describe how an impulse is passed from one neurone to the next at a synapse. [3] (c) State what synapses ensure about the direction in which impulses travel. [1]

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

B B (1)

2. [3]

- (a) sensory (neurone) (1)
- (b) motor (neurone) (1)
- (c) relay (neurone) (1) allow intermediate / connector neurone

3. [5]

- (a) muscle (1)
- (b) impulse in sensory neurone to the spinal cord / CNS (1)
- passes to a relay neurone (1)
- passes to a motor neurone (1)
- motor neurone carries impulse to the muscle / effector (1)
- (b) Max 3
- (c) any one from: rapid / automatic response; protects the body from harm / damage / injury (1)

4. [2]

- automatic (1) allow does not involve conscious thought / no decision
- rapid / fast (1)
- integrates / coordinates stimuli with the responses of effectors (1)
- protects the body (from harm) (1)
- Max 2

5. [1] **Supplement**

B B (1)

6. [5] **Supplement**

- (a) a junction between two neurones (1) allow a gap between two neurones
- (b) impulse stimulates release of neurotransmitter (molecules) from vesicles into the synaptic gap (1)
- neurotransmitter diffuses across the gap (1)
- neurotransmitter binds with receptor proteins on the next neurone (1)
- impulse is stimulated in the next neurone (1)
- (b) Max 3
- (c) (impulses travel in) one direction only (1) allow one way