

14. Coordination and response

14.1 Coordination and response

Paper 1 and 2

Question Paper

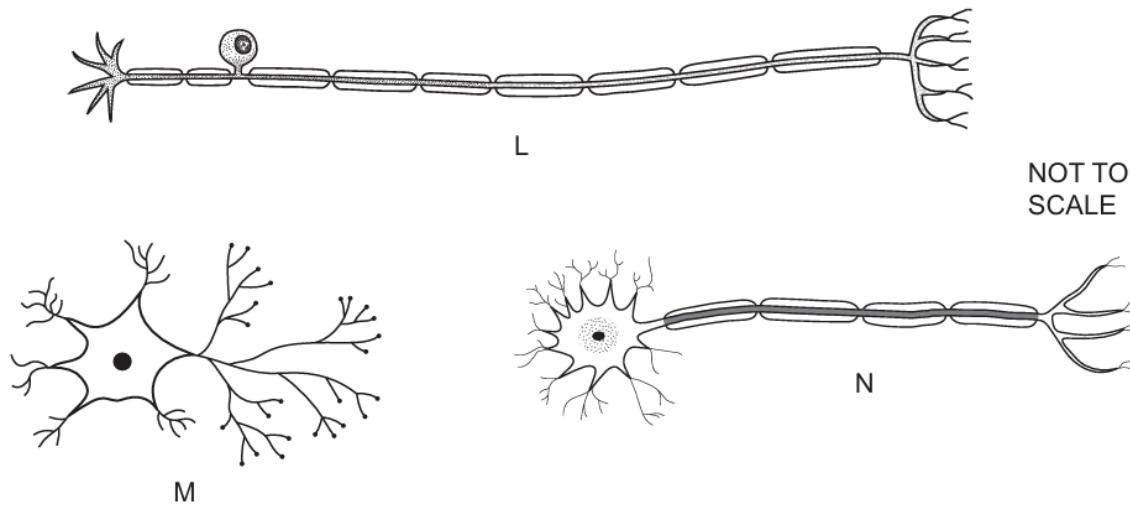
Paper 1

Questions are applicable for both core and extended candidates

1 What is the pathway of a reflex arc from the receptor to the effector?

- A motor neurone → relay neurone → sensory neurone
- B motor neurone → sensory neurone → relay neurone
- C sensory neurone → motor neurone → relay neurone
- D sensory neurone → relay neurone → motor neurone

2 The diagrams show three types of neurones.

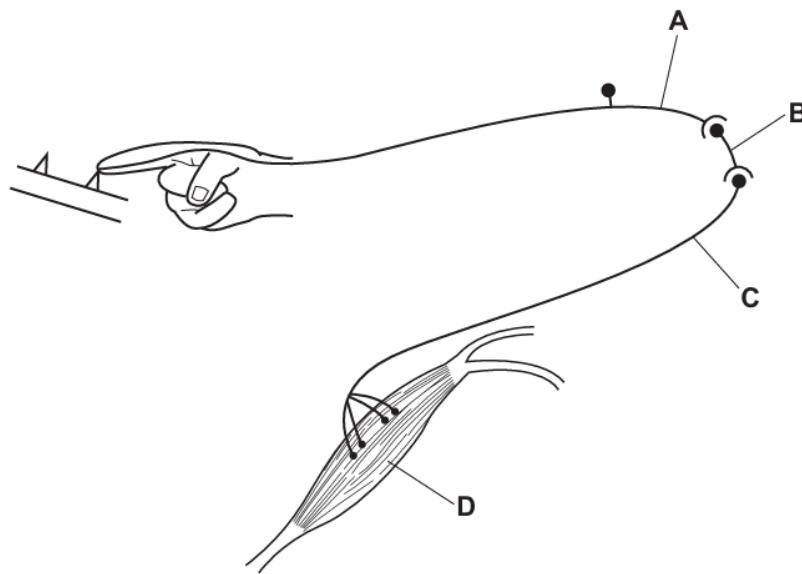


Which sequence shows the direction that impulses will travel during a reflex action?

- A L → M → N
- B M → L → N
- C M → N → L
- D N → M → L

3 The diagram shows a reflex arc in a human nervous system. The person's finger has just made contact with a sharp object.

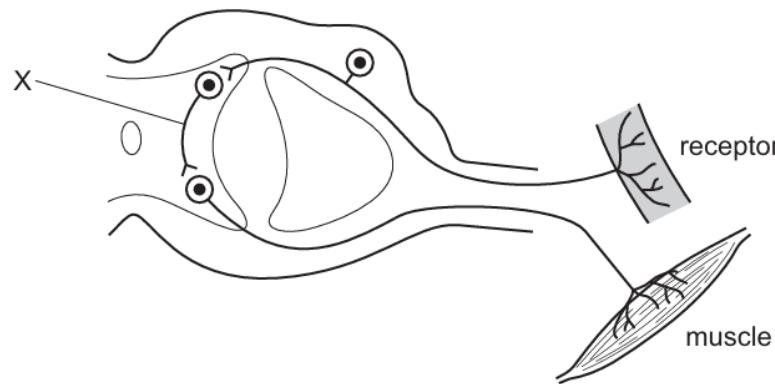
Which part is the motor neurone?



4 What is the name of the junction between two neurones?

- A effector
- B receptor
- C gland
- D synapse

5 The diagram shows the structures in a reflex arc.



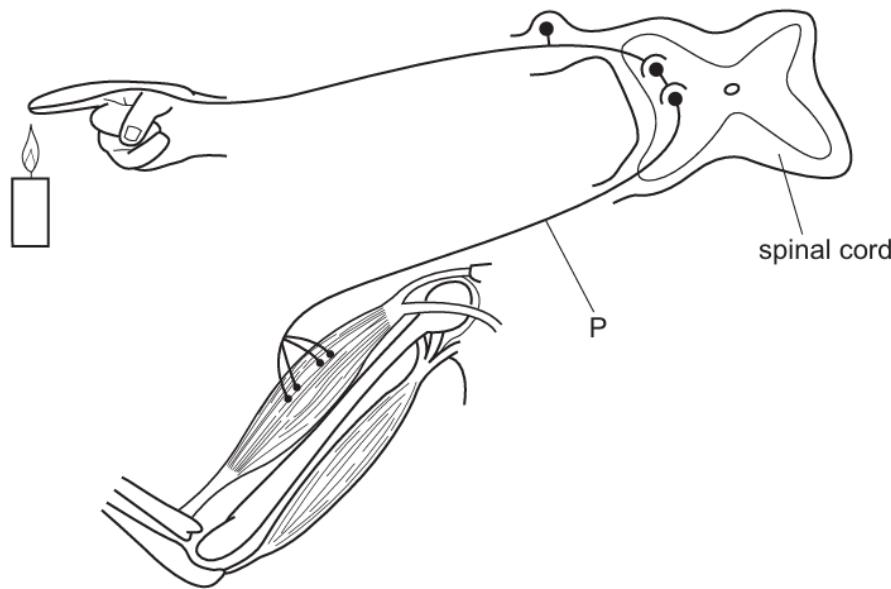
What is X?

- A effector
- B relay neurone
- C sensory neurone
- D synapse

6 What is the order of structures that a nerve impulse travels through during a reflex action?

- A effector → neurones → receptor
- B receptor → neurones → effector
- C neurones → effector → receptor
- D receptor → effector → neurones

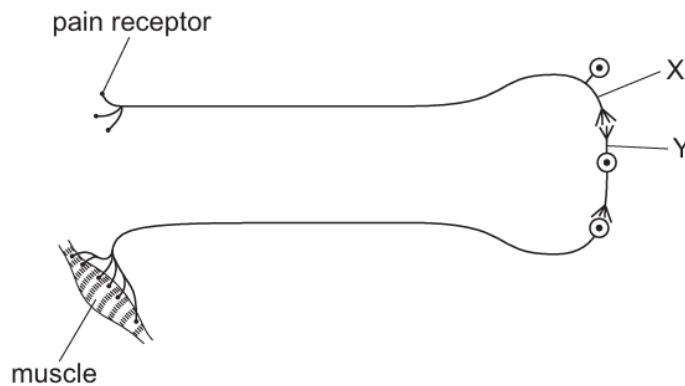
7 The diagram shows a simple reflex arc.



What is the function of the part labelled P?

- A passing impulses to the central nervous system
- B passing impulses to the effector
- C passing impulses to the receptor
- D passing impulses to the sensory neurone

8 The diagram shows a reflex arc that passes through the spinal cord.



Which type of neurones are X and Y?

	X	Y
A	motor neurone	relay neurone
B	relay neurone	sensory neurone
C	sensory neurone	motor neurone
D	sensory neurone	relay neurone

9 The structures listed are part of the nervous system.

- 1 brain
- 2 effector
- 3 receptor
- 4 relay neurone

In a reflex arc, which structures are connected to a motor neurone by synapses?

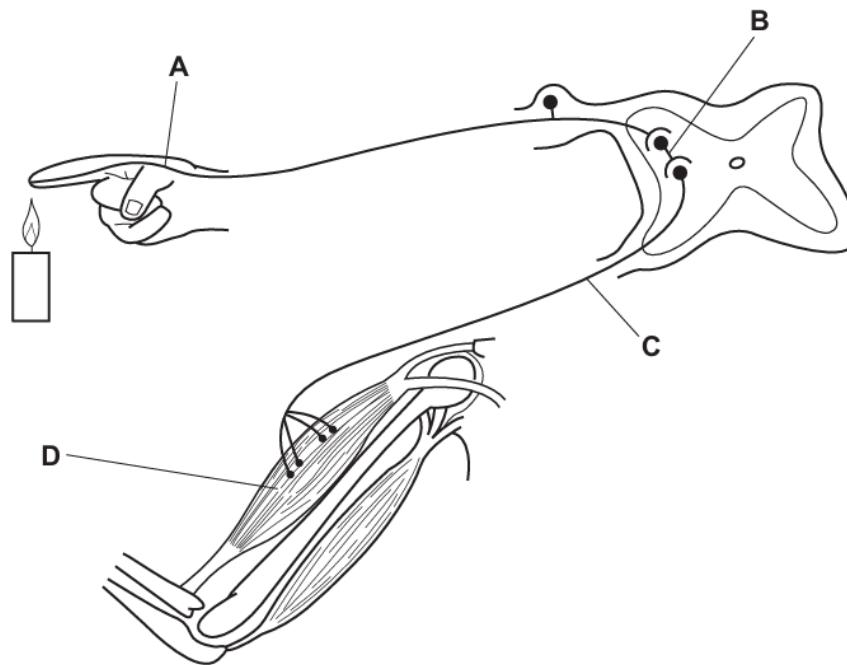
A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

10 What is the sequence of neurones connecting a receptor to an effector in a reflex arc?

- A motor → relay → sensory
- B motor → sensory → relay
- C sensory → motor → relay
- D sensory → relay → motor

11 The diagram shows a reflex arc.

Which labelled part is the effector?



12 Which is the correct sequence of structures through which a nerve impulse passes in a reflex arc?

- A effector → motor neurone → relay neurone → sensory neurone → receptor
- B effector → sensory neurone → relay neurone → motor neurone → receptor
- C receptor → motor neurone → relay neurone → sensory neurone → effector
- D receptor → sensory neurone → relay neurone → motor neurone → effector

13 Which structure contains relay neurones?

- A** gland
- B** muscle
- C** spinal cord
- D** synapse

14 A man injures his arm in an accident. Afterwards, he can move his hand but cannot feel objects touching his hand.

What could cause this?

- A** Both sensory and motor neurones are cut.
- B** Effectors are damaged.
- C** Motor neurones are cut.
- D** Sensory neurones are cut.

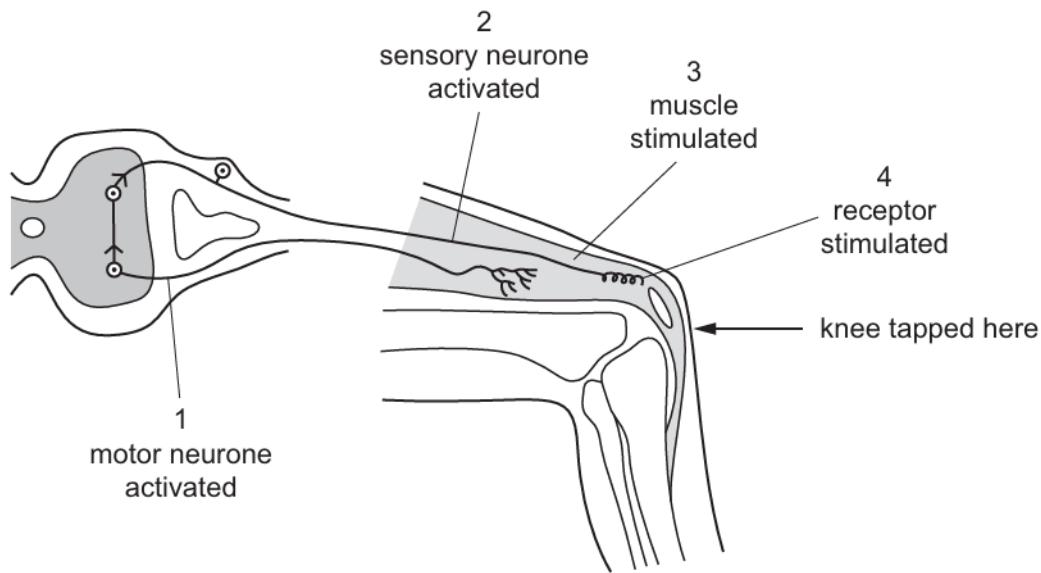
15 Which structure transfers information to the central nervous system?

- A** effector
- B** motor neurone
- C** relay neurone
- D** sensory neurone

16 Which structure is an effector?

- A** adrenal gland
- B** motor neurone
- C** optic nerve
- D** spinal cord

17 The diagram shows a simple reflex arc.

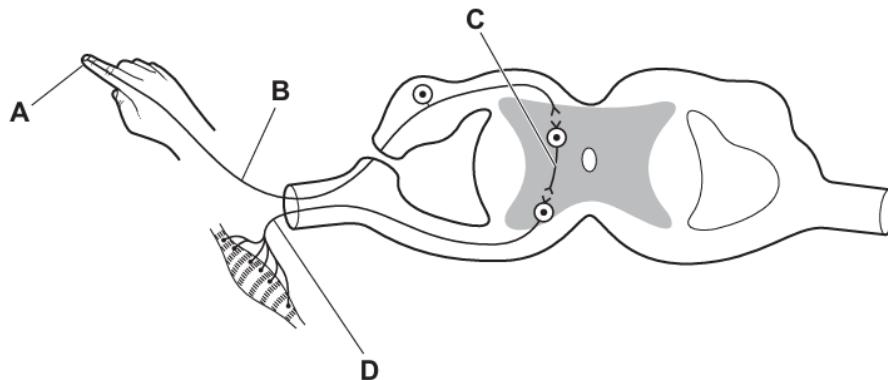


What is the correct order of events after the knee is tapped?

- A 1 → 2 → 3 → 4
- B 1 → 4 → 2 → 3
- C 4 → 2 → 1 → 3
- D 4 → 3 → 2 → 1

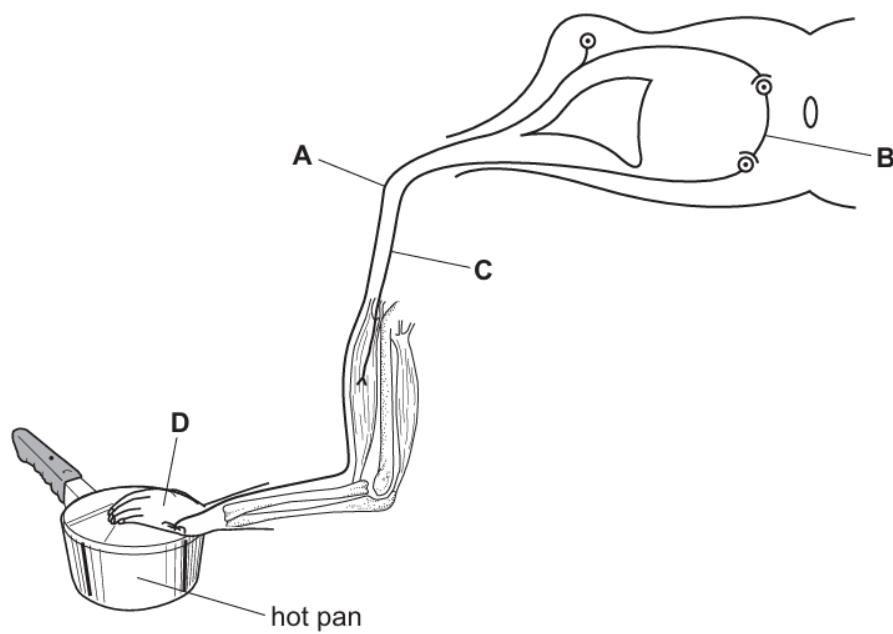
18 The diagram shows a simple reflex arc.

Which labelled part is the sensory neurone?



19 The diagram shows a reflex arc.

Which label points to the sensory neurone?



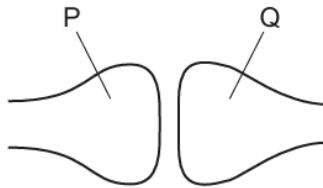
Paper 2

Questions are applicable for both core and extended candidates unless indicated in the question

20 Which process moves neurotransmitters across a synapse? **(extended only)**

- A active transport
- B diffusion
- C gravity
- D osmosis

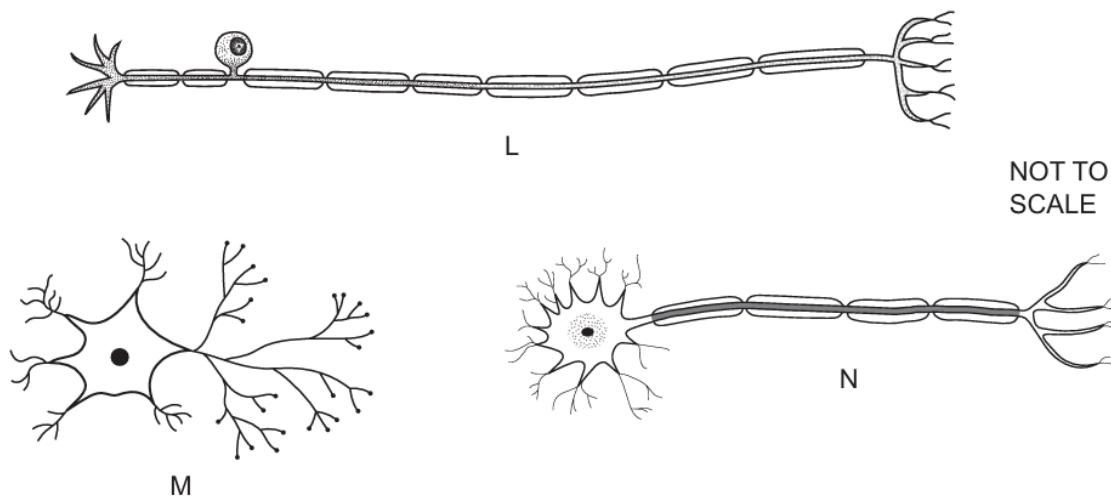
21 The diagram shows a synapse in a reflex arc.



What are the identities of the two neurones and in which direction does the neurotransmitter pass?

	neurone P	neurone Q	direction of passage of the neurotransmitter
A	motor	relay	$P \rightarrow Q$
B	motor	sensory	$P \rightarrow Q$
C	relay	motor	$Q \rightarrow P$
D	relay	sensory	$Q \rightarrow P$

22 The diagrams show three types of neurones.

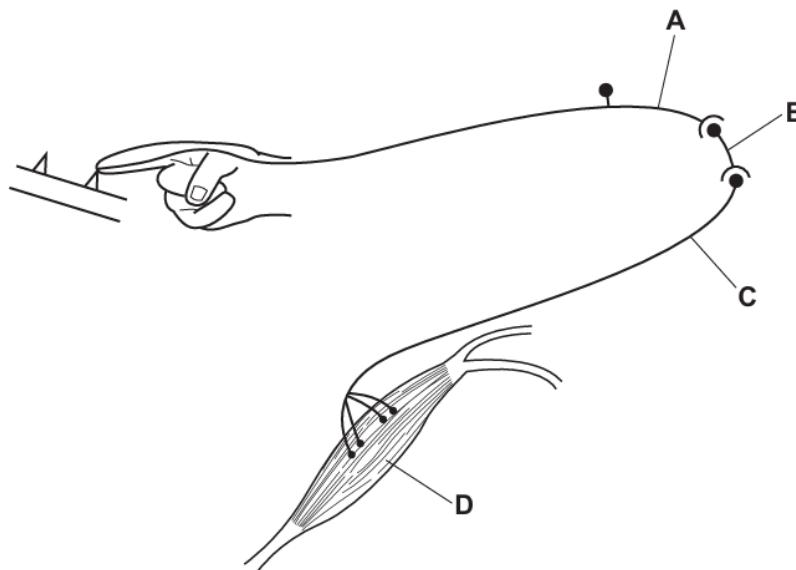


Which sequence shows the direction that impulses will travel during a reflex action?

- A** L → M → N
- B** M → L → N
- C** M → N → L
- D** N → M → L

23 The diagram shows a reflex arc in a human nervous system. The person's finger has just made contact with a sharp object.

Which part is the motor neurone?



24 The events listed involve neurotransmitter molecules at a synapse.

- 1 They bind with receptor proteins.
- 2 They diffuse across the synaptic gap.
- 3 They enter the synaptic gap.
- 4 They are released from vesicles.

What is the sequence of events that occur when an impulse arrives at the synapse? **(extended only)**

- A** $3 \rightarrow 2 \rightarrow 1 \rightarrow 4$
- B** $4 \rightarrow 3 \rightarrow 1 \rightarrow 2$
- C** $3 \rightarrow 4 \rightarrow 1 \rightarrow 2$
- D** $4 \rightarrow 3 \rightarrow 2 \rightarrow 1$

25 Which statement describes what happens during the transmission of an electrical impulse along a reflex arc? **(extended only)**

- A** The relay neurone has receptor proteins which bind with neurotransmitter molecules.
- B** The relay neurone has vesicles which bind with neurotransmitter molecules.
- C** The sensory neurone causes receptor proteins to release neurotransmitter molecules.
- D** The sensory neurone impulses cause vesicles to release receptor protein molecules.

26 The structures listed are part of the nervous system.

- 1 brain
- 2 effector
- 3 receptor
- 4 relay neurone

In a reflex arc, which structures are connected to a motor neurone by synapses?

- A** 1 and 2
- B** 1 and 3
- C** 2 and 4
- D** 3 and 4

27 Which is the correct sequence of structures through which a nerve impulse passes in a reflex arc?

- A effector → motor neurone → relay neurone → sensory neurone → receptor
- B effector → sensory neurone → relay neurone → motor neurone → receptor
- C receptor → motor neurone → relay neurone → sensory neurone → effector
- D receptor → sensory neurone → relay neurone → motor neurone → effector

28 Which structure contains relay neurones?

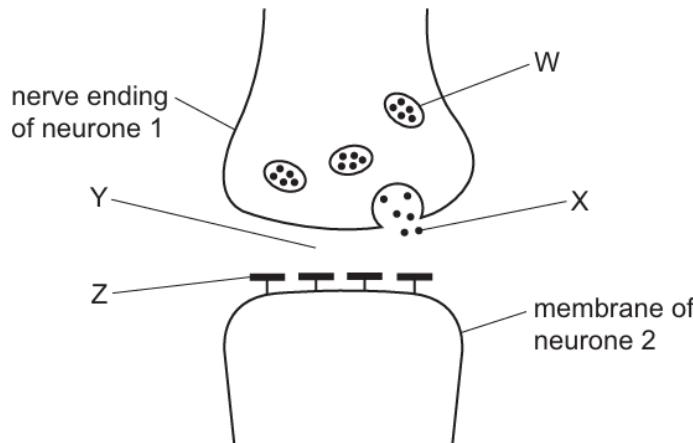
- A gland
- B muscle
- C spinal cord
- D synapse

29 A man injures his arm in an accident. Afterwards, he can move his hand but cannot feel objects touching his hand.

What could cause this?

- A Both sensory and motor neurones are cut.
- B Effectors are damaged.
- C Motor neurones are cut.
- D Sensory neurones are cut.

30 The diagram shows a synapse.



What are the labelled parts? **(extended only)**

	W	X	Y	Z
A	synaptic cleft	neurotransmitter	vesicle	receptor
B	synaptic cleft	receptor	vesicle	neurotransmitter
C	vesicle	neurotransmitter	synaptic cleft	receptor
D	vesicle	receptor	synaptic cleft	neurotransmitter

31 The components of a reflex arc are shown in the flow diagram.

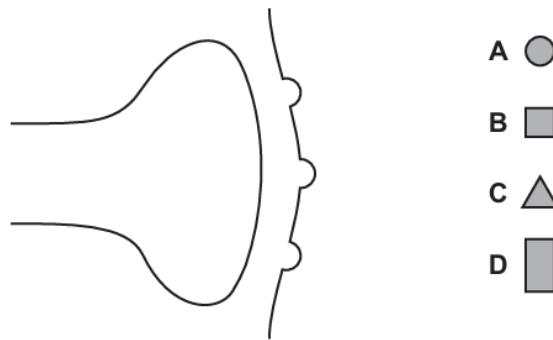
receptor → sensory neurone → synapse → relay neurone → synapse → motor neurone → effector

Which component is responsible for ensuring that the nerve impulses travel in one direction only?

- A** motor neurone **(extended only)**
- B** receptor
- C** sensory neurone
- D** synapse

32 The diagram represents a synapse in the brain involved in the perception of pain.

Which labelled molecule represents heroin? **(extended only)**



A 

B 

C 

D 