

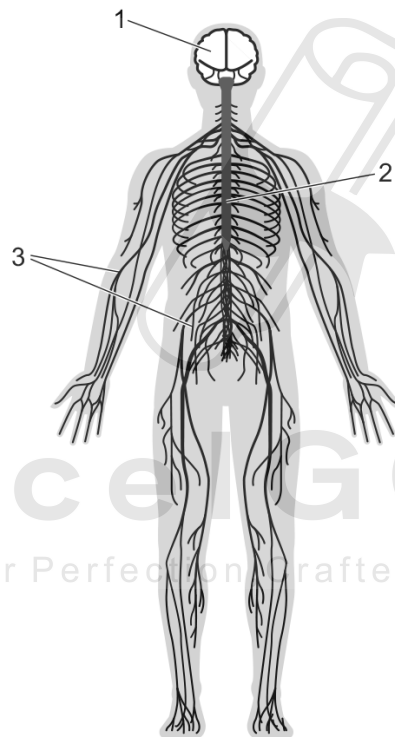
Chapter 14

Coordination and response

14.1 Nervous control in humans

01.0610_m22_qp_22 Q: 25

Which numbered parts form the central nervous system?



A 1 only

B 1 and 2

C 2 and 3

D 3 only

02. 0610_m21_qp_22 Q: 25

What is a function of a synapse?

- A** to allow impulses to travel in both directions
 - B** to ensure impulses travel in one direction
 - C** to release vesicles into the synaptic gap
 - D** to transport neurotransmitters by osmosis
-

03. 0610_w21_qp_21 Q: 24

Which situation is a voluntary action?

- A** an increase in heart rate in response to danger
 - B** blinking to avoid injury to the eye
 - C** raising your hand to answer a question
 - D** sweating in hot weather
-

04. 0610_w21_qp_22 Q: 25

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
-

05. 0610_w21_qp_23 Q: 25

What happens to the muscles in the iris when a person moves from a brightly lit room to a dimly lit room?

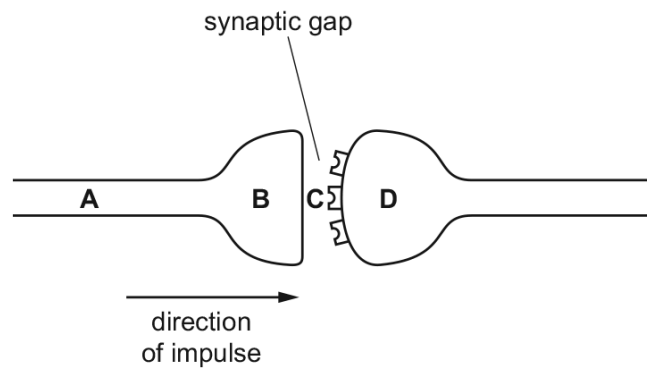
- A** The circular muscles and the radial muscles relax.
 - B** The circular muscles contract and the radial muscles relax.
 - C** The circular muscles and the radial muscles contract.
 - D** The circular muscles relax and the radial muscles contract.
-

14.1. NERVOUS CONTROL IN HUMANS

06. 0610_m20_qp_22 Q: 26

The diagram shows a synapse.

Where are vesicles containing neurotransmitter molecules found?



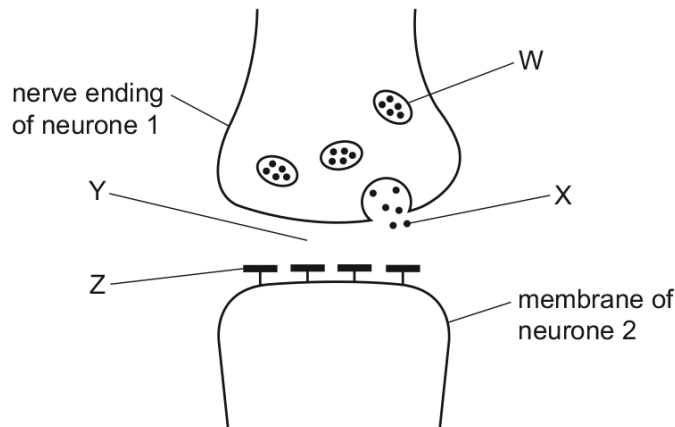
07. 0610_p20_qp_20 Q: 21

Which of the following can be an effector in a reflex arc?

- A a gland
- B a light receptor
- C the brain
- D the spinal cord

08. 0610_s20_qp_21 Q: 24

The diagram shows a synapse.

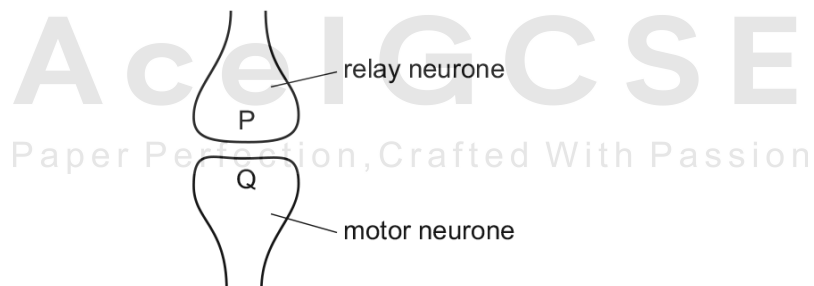


What are the labelled parts?

	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

09. 0610_s20_qp_23 Q: 23

The diagram shows a synapse between a motor neurone and a relay neurone.



What passes from P to Q?

- A** an electrical impulse
- B** an enzyme
- C** a hormone
- D** a neurotransmitter

14.1. NERVOUS CONTROL IN HUMANS

10. 0610_w20_qp_21 Q: 23

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
-

11. 0610_w20_qp_22 Q: 23

Which structure contains relay neurones?

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

12. 0610_w20_qp_22 Q: 24

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.
-

13. 0610_w20_qp_23 Q: 23

Sensory neurones conduct impulses from

- A the brain and spinal cord to muscles.
 - B one sense organ to another sense organ.
 - C sense organs to the brain and spinal cord.
 - D muscles to sense organs.
-

14. 0610_s19_qp_21 Q: 24

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
- B receptor
- C sensory neurone
- D synapse

15. 0610_s19_qp_21 Q: 28

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

Which labelled molecule represents heroin?



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16. 0610_s19_qp_22 Q: 24

Which statement about involuntary responses is correct?

- A They always result in the same response to the same stimulus.
- B They are learned responses.
- C They are slower than voluntary responses.
- D They never use voluntary muscles.

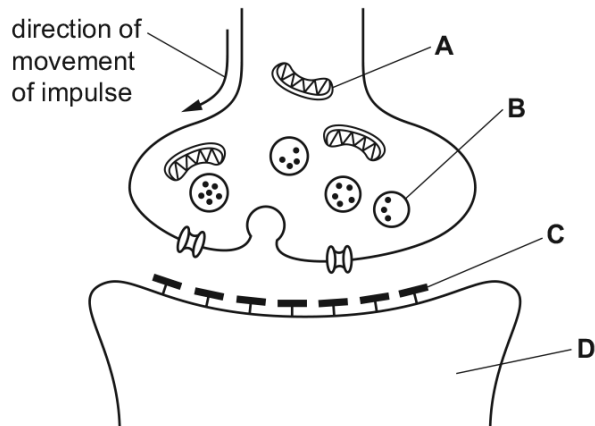
14.1. NERVOUS CONTROL IN HUMANS

17. 0610_s19_qp_22 Q: 28

The diagram shows a synapse.

Heroin affects the neurone.

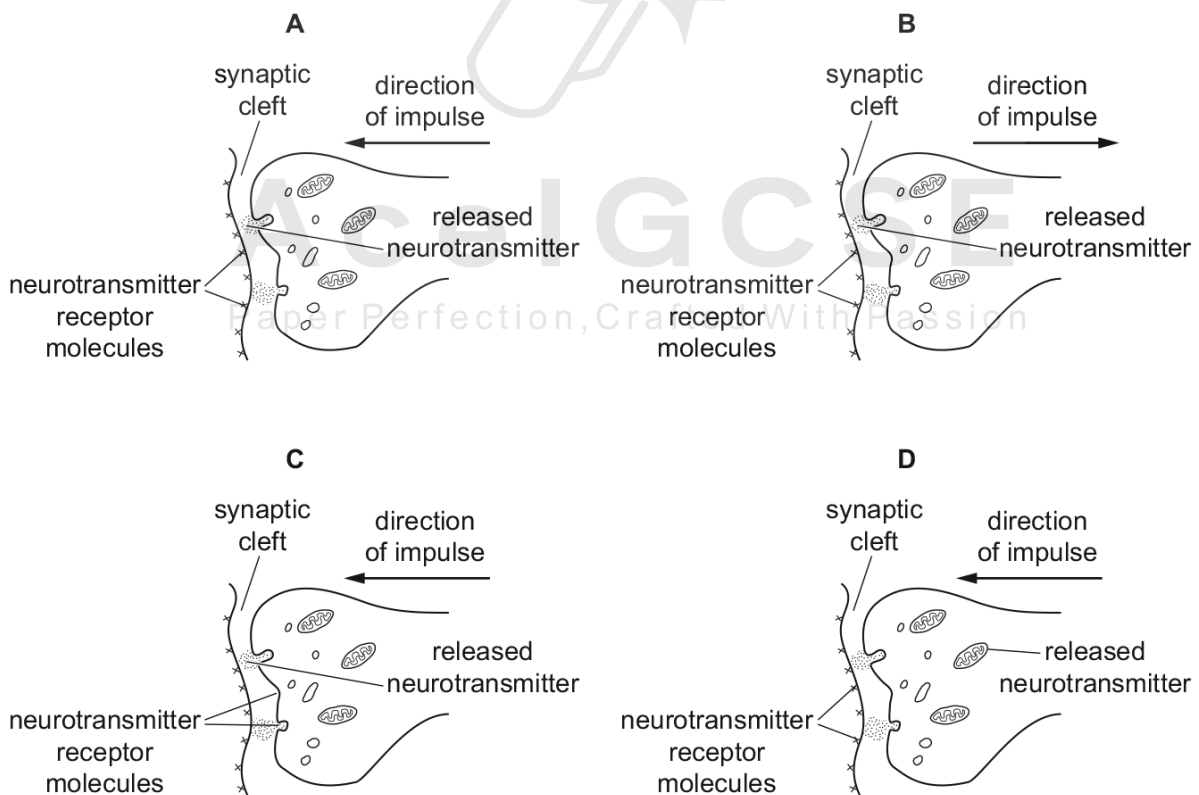
Which labelled part does the heroin directly affect?



18. 0610_s19_qp_23 Q: 24

The diagrams show the structures on each side of a synaptic cleft.

Which diagram is correctly labelled?



19. 0610_w19_qp_21 Q: 22

The neurones at synapses contain vesicles.

Which type of substance is found inside the vesicles?

- A enzyme
- B chromosomes
- C neurotransmitter
- D steroid

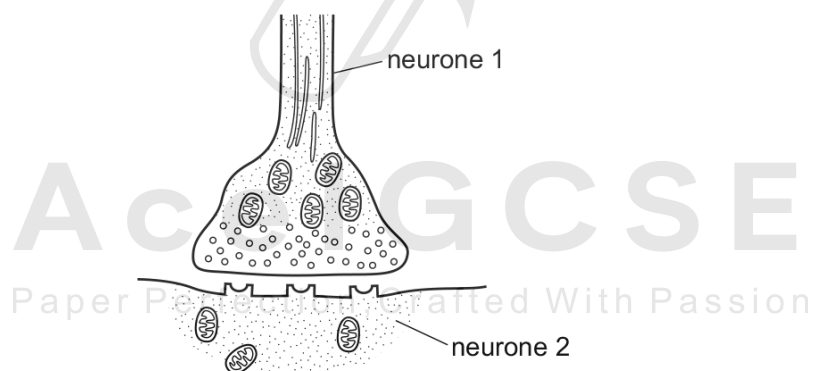
20. 0610_w19_qp_22 Q: 22

Which process transmits an impulse across a synapse?

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

21. 0610_w19_qp_23 Q: 22

The diagram shows a synapse.



Heroin is a drug that can bind with receptors in a synapse.

What is the **most** likely effect heroin will have on the synapse?

- A cause the impulse to travel back along neurone 1
- B prevent neurotransmitter binding with receptors on neurone 2
- C stop the impulse being generated in neurone 1
- D transfer the impulse to a different neurone other than neurone 2

14.1. NERVOUS CONTROL IN HUMANS

22. 0610_m18_qp_22 Q: 19

A boy accidentally touches a very hot object and immediately takes his hand away.

In this reflex action, what is the effector?

- A a heat receptor in his hand
- B a motor neurone
- C a muscle in his arm
- D the spinal cord

23. 0610_s18_qp_21 Q: 23

Four processes occur when impulses cross a synapse.

- P neurotransmitter diffuses across the gap
- Q neurotransmitter binds with receptors
- R impulse stimulates vesicles
- S release of neurotransmitter

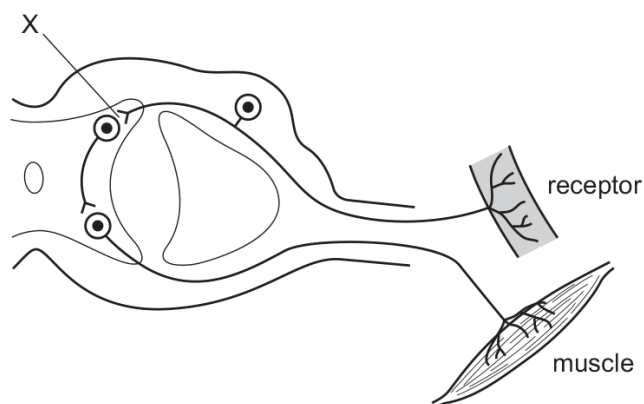
What is the correct sequence for these processes?

- A P → R → Q → S
- B R → P → Q → S
- C R → S → P → Q
- D S → Q → R → P



24. 0610_s18_qp_22 Q: 23

The diagram shows the structures in a reflex arc.



What is X?

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

25. 0610_s18_qp_23 Q: 23

What is the correct sequence in a reflex action?

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

26. 0610_w18_qp_22 Q: 23

What does the central nervous system consist of?

- A brain, spinal cord and peripheral nerves
- B brain and spinal cord only
- C brain only
- D spinal cord and peripheral nerves only

14.1. NERVOUS CONTROL IN HUMANS

27. 0610_s17_qp_21 Q: 23

The steps to produce a reflex action where the hand is withdrawn from a hot object are shown.

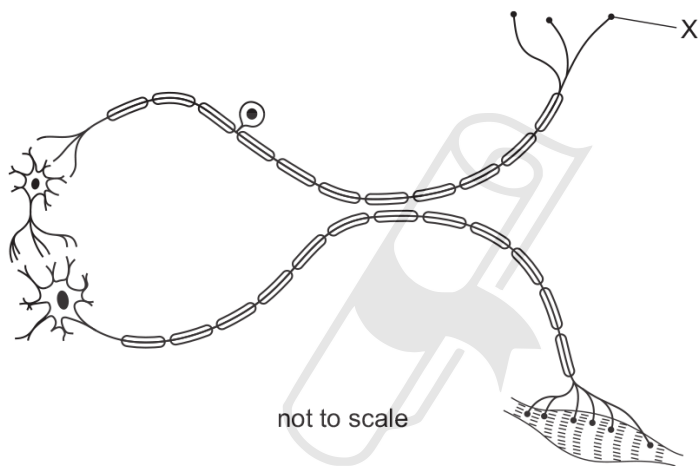
- 1 Nerve impulses pass from the sensory neurone to the relay neurone.
- 2 Nerve impulses pass from motor neurone to the effector.
- 3 Nerve impulses pass from the receptor to the neurone.

What is the correct sequence of steps?

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

28. 0610_s17_qp_22 Q: 23

The diagram shows a reflex arc.

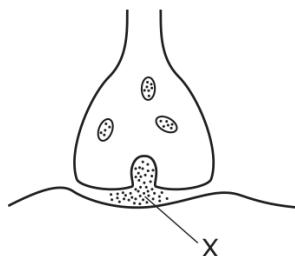


What is X?

- A** a relay neurone
B a synapse
C the effector
D the receptor
-

29. 0610_s17_qp_23 Q: 23

The diagram shows a synapse.



What do the dots at X represent?

- A neurotransmitter
- B receptor molecule
- C synaptic cleft
- D vesicle

30. 0610_w17_qp_21 Q: 26

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 neurotransmitter
A	motor	relay	P → Q
B	motor	sensory	P → Q
C	relay	motor	Q → P
D	relay	sensory	Q → P

31. 0610_p16_qp_20 Q: 21

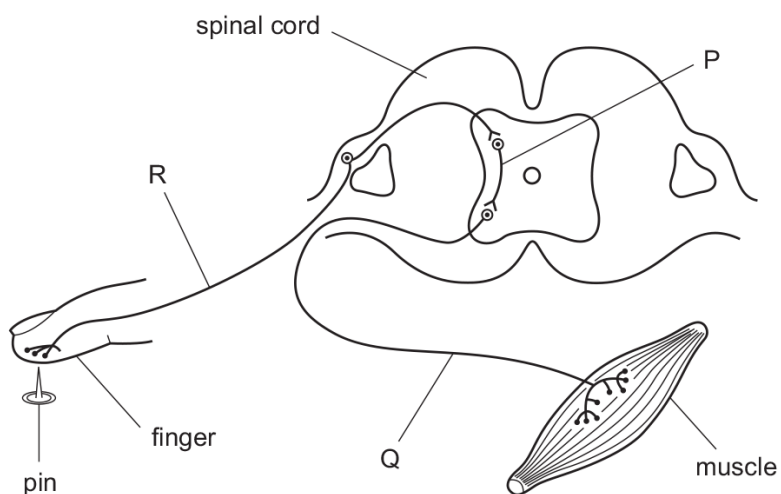
Which of the following can be an effector in a reflex arc?

- A a gland
- B a light receptor
- C the brain
- D the spinal cord

14.1. NERVOUS CONTROL IN HUMANS

32. 0610_s16_qp_21 Q: 25

The diagram represents a simple reflex arc.



What is the sequence of nerve cells through which an impulse passes during a reflex action?

	first	→	last
A	P	Q	R
B	Q	R	P
C	Q	P	R
D	R	P	Q

SN	Paper	Q. No.	Answer
01	0610_m22_qp_22	25	B
02	0610_m21_qp_22	25	B
03	0610_w21_qp_21	24	C
04	0610_w21_qp_22	25	C
05	0610_w21_qp_23	25	D
06	0610_m20_qp_22	26	B
07	0610_p20_qp_20	21	A
08	0610_s20_qp_21	24	C
09	0610_s20_qp_23	23	D
10	0610_w20_qp_21	23	D
11	0610_w20_qp_22	23	C
12	0610_w20_qp_22	24	D
13	0610_w20_qp_23	23	C
14	0610_s19_qp_21	24	D
15	0610_s19_qp_21	28	A
16	0610_s19_qp_22	24	A
17	0610_s19_qp_22	28	C
18	0610_s19_qp_23	24	A
19	0610_w19_qp_21	22	C
20	0610_w19_qp_22	22	B
21	0610_w19_qp_23	22	B
22	0610_m18_qp_22	19	C
23	0610_s18_qp_21	23	C
24	0610_s18_qp_22	23	D
25	0610_s18_qp_23	23	D
26	0610_w18_qp_22	23	B
27	0610_s17_qp_21	23	C
28	0610_s17_qp_22	23	D
29	0610_s17_qp_23	23	A
30	0610_w17_qp_21	26	D
31	0610_p16_qp_20	21	A
32	0610_s16_qp_21	25	D