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0 9 Many human actions are reflexes.

0 9 . 1 Which **two** of the following are examples of reflex actions?

[2 marks]

Tick **two** boxes.

Jumping in the air to catch a ball ☐

Raising a hand to protect the eyes in bright light ☐

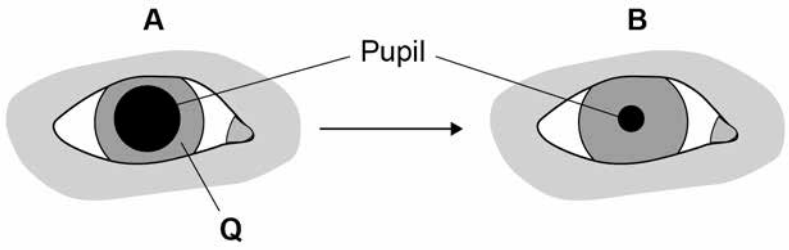
Releasing saliva when food enters the mouth ☐

Running away from danger ☐

Withdrawing the hand from a sharp object ☐

Figure 12 shows how the size of the pupil of the human eye can change by reflex action.

Figure 12



0 9 . 2 Name **one** stimulus that would cause the pupil to change in size from **A** to **B**, as shown in **Figure 12**.

[1 mark]

_____

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0 9 . 3 Structure **Q** causes the change in size of the pupil.

Name structure **Q**.

[1 mark]

0 9 . 4 Describe how structure **Q** causes the change in the size of the pupil from **A** to **B**.

[1 mark]

Question 9 continues on the next page

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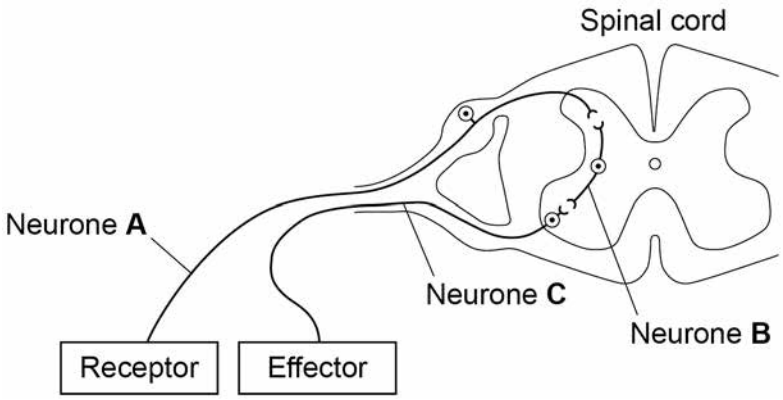
0 9 . 5 **Figure 13** shows some structures involved in the coordination of a reflex action.

Figure 13



Describe how the structures shown in **Figure 13** help to coordinate a reflex action.

[6 marks]

11

Question	Answers	Extra information	Mark	AO / Spec. Ref.
09.1	releasing saliva when food enters the mouth withdrawing the hand from a sharp object		1 1	AO2 4.5.2.1
09.2	bright light	allow described method of increasing light ignore light unqualified allow correctly named drug eg morphine / heroin	1	AO1 4.5.2.3
09.3	iris		1	AO1 4.5.2.3
09.4	muscle contraction	allow muscles shorten ignore radial / circular ignore muscles relax / constrict do **not** accept muscles expand do **not** accept ciliary muscle contracts	1	AO1 4.5.2.3

Question	Answers	Mark	AO / Spec. Ref.
09.5	**Level 2:** Scientifically relevant facts, events or processes are identified and given in detail to form an accurate account.	4–6	AO1 4.5.2.1
	Level 1: Facts, events or processes are identified and simply stated but their relevance is not clear.	1–3	
	No relevant content	0	
	Indicative content • receptor detects stimulus • eg receptor detects pressure • receptor generates impulses / electrical signals • neurones conduct impulses / electrical signals • neurone A conducts impulses to spinal cord • neurone A = sensory neurone • synapse between neurones • chemical (/ neurotransmitter) crosses synapse • chemical stimulates impulse(s) in neurone B • neurone B = relay neurone • neurone C = motor neurone • effector carries out response • eg muscles of the arm / leg contract • muscles contract **or** gland secretes chemicals to access **level 2**, candidates need to consider, in terms of the indicative content, the receptor, the neurones and the effector in the correct sequence		
Total		**11**	