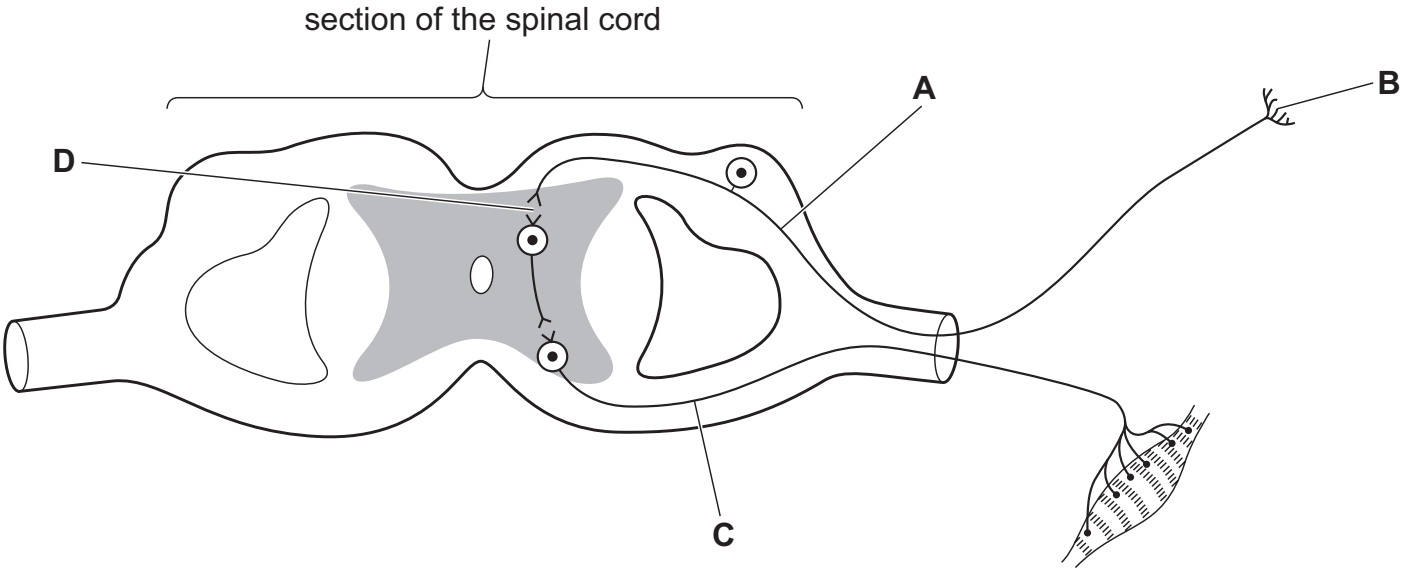
18 The diagram shows the parts of the nervous system involved in a reflex arc.

Which letter identifies a synapse?



21 Events that occur at a synapse are listed.

They are **not** in the correct order.

1 An impulse is stimulated in the next neurone.

2 An impulse stimulates the release of neurotransmitter molecules from vesicles into the synaptic gap.

3 Neurotransmitter molecules bind with receptor proteins on the next neurone.

4 The neurotransmitter molecules diffuse across the gap.

What is the actual sequence of events?

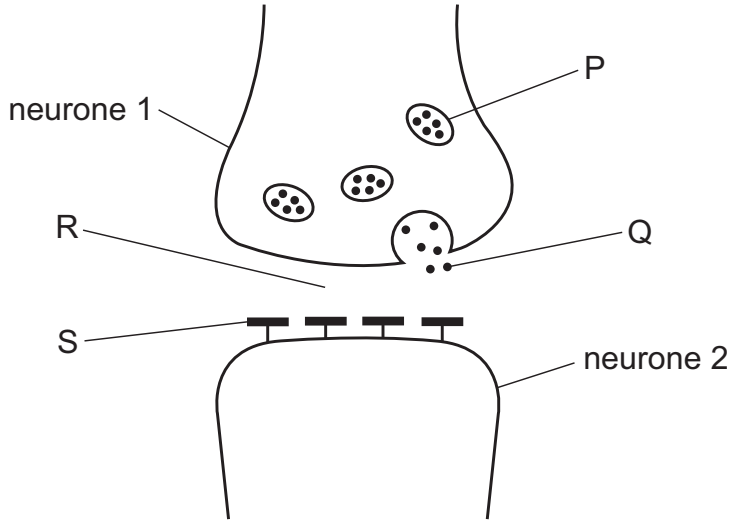
A $2 \rightarrow 4 \rightarrow 1 \rightarrow 3$

B $2 \rightarrow 4 \rightarrow 3 \rightarrow 1$

C $4 \rightarrow 2 \rightarrow 1 \rightarrow 3$

D $4 \rightarrow 2 \rightarrow 3 \rightarrow 1$

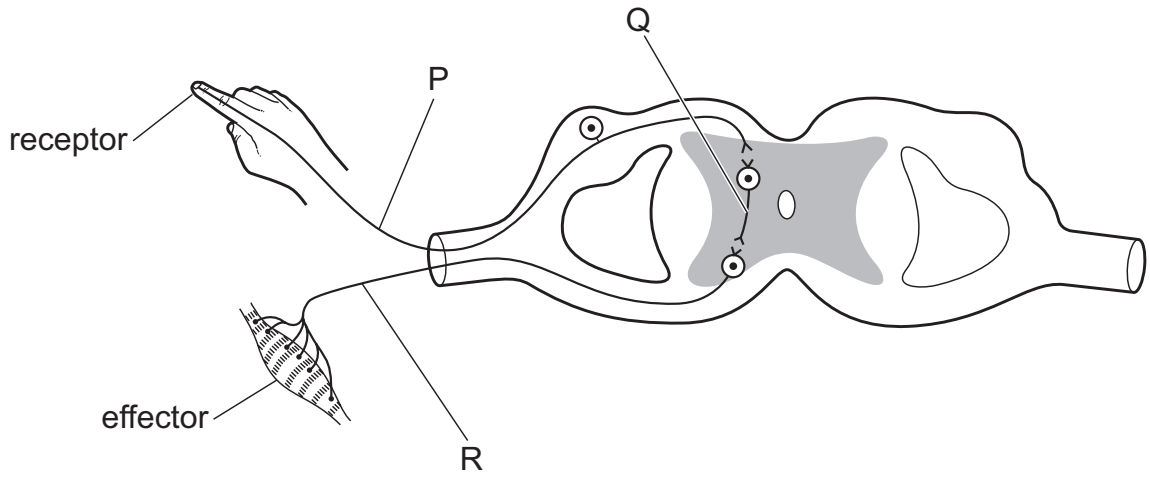
21 The diagram shows a synapse.



What are the labelled parts?

	P	Q	R	S
A	synaptic gap	neurotransmitter	vesicle	receptor
B	synaptic gap	receptor	vesicle	neurotransmitter
C	vesicle	neurotransmitter	synaptic gap	receptor
D	vesicle	receptor	synaptic gap	neurotransmitter

23 The diagram shows a simple reflex arc.



What are the names of the structures labelled P, Q and R?

	P	Q	R
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 **(a)** The human retina contains receptor cells called rods and cones.

Fig. 2.1 shows the distribution of receptor cells in a human retina.

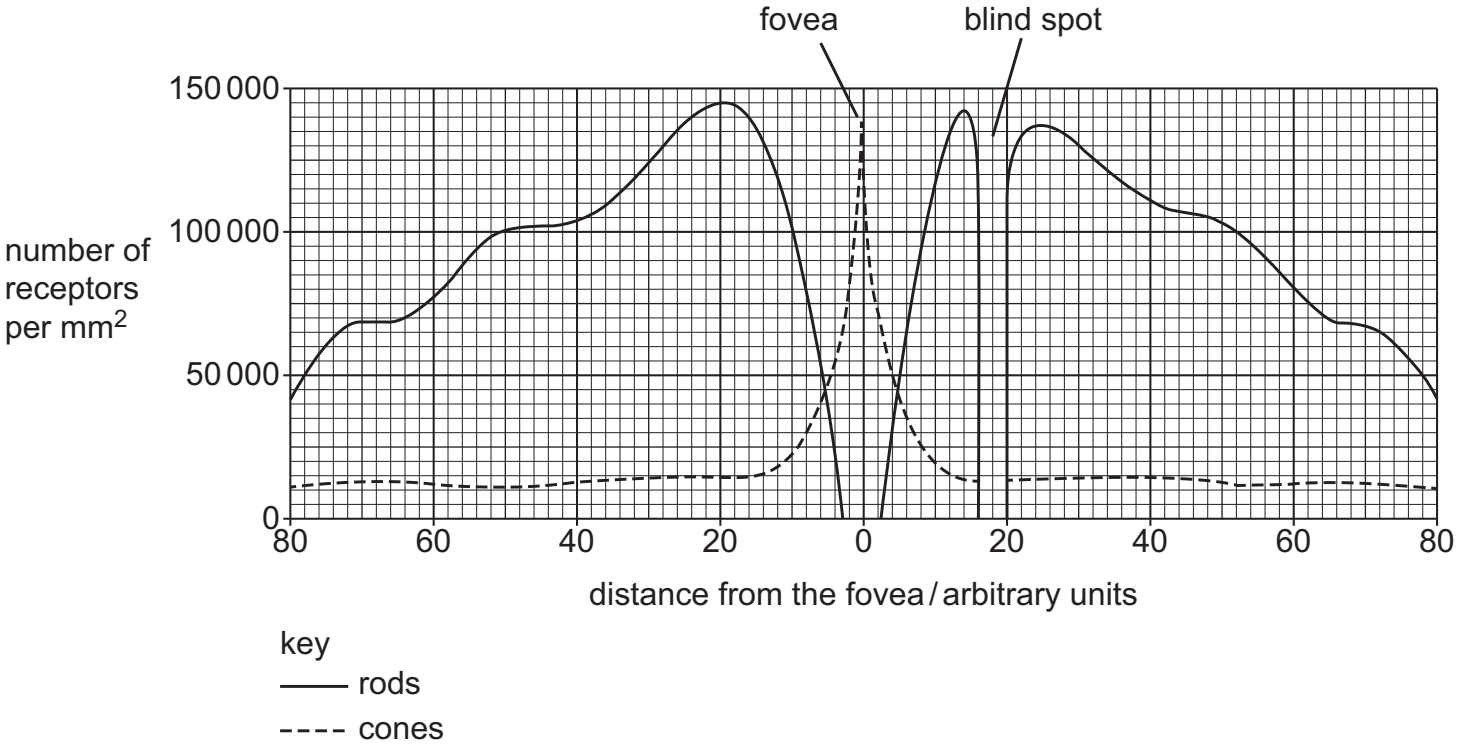


Fig. 2.1

Using the information in Fig. 2.1, describe the differences in the distribution of rods and cones.

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..... [4]

(b) Nocturnal animals are active at night.

Suggest how the number of receptor cells in the retina of a nocturnal animal differs from those in the retina of an animal that is active in the day.

Explain your suggestion.

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.....

..... [2]

(c) In humans, the size of the iris increases in bright light conditions.

During this response one effector in the iris contracts and one effector relaxes.

(i) State the name of this response.

..... [1]

(ii) State the name of the effector that contracts in this response.

..... [1]

(iii) State the name of the type of action shown by the paired effectors during this response.

..... [1]

(d) The optic nerve contains many neurones.

Fig. 2.2 shows a synapse between two neurones.

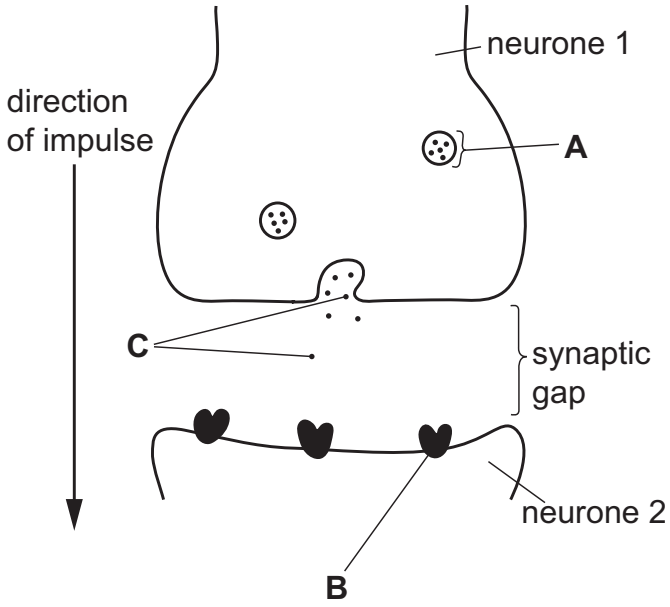

Fig. 2.2

(i) State the names of the parts labelled **A**, **B** and **C** in Fig. 2.2.

A .....

B .....

C .....

[3]

(ii) Explain how part **C** in Fig. 2.2 moves across the synaptic gap.

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..... [2]

[Total: 14]