

- 21** When moving from an area with low light intensity to an area with high light intensity, how do the circular and radial muscles of the iris react?

	circular muscles	radial muscles
A	contract	no change
B	contract	relax
C	relax	contract
D	relax	no change

- 19** A person looks at a distant object in a dark area. The person then moves to a bright area and looks at a near object.

Which statement describes some of the changes that take place in the person's eyes?

- A** The circular muscles of the iris contract, the pupil constricts, the ciliary muscles relax and the lens gets thicker.
- B** The radial muscles of the iris relax, the circular muscles of the iris contract, the pupil constricts and the lens gets thinner.
- C** The radial muscles of the iris relax, the pupil constricts, the ciliary muscles contract and the lens gets thicker.
- D** The radial muscles of the iris relax, the pupil dilates, the ciliary muscles relax and the lens gets thicker.

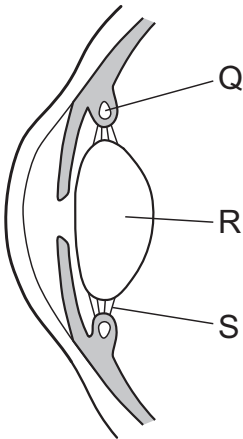
- 20** Which row shows the state of the ciliary muscles and suspensory ligaments when the eye is focusing on a near object?

	ciliary muscles	suspensory ligaments
A	contracted	slack
B	contracted	tense
C	relaxed	slack
D	relaxed	tense

- 22** Which row shows the function of rod cells?

	night vision	colour vision
A	yes	yes
B	yes	no
C	no	yes
D	no	no

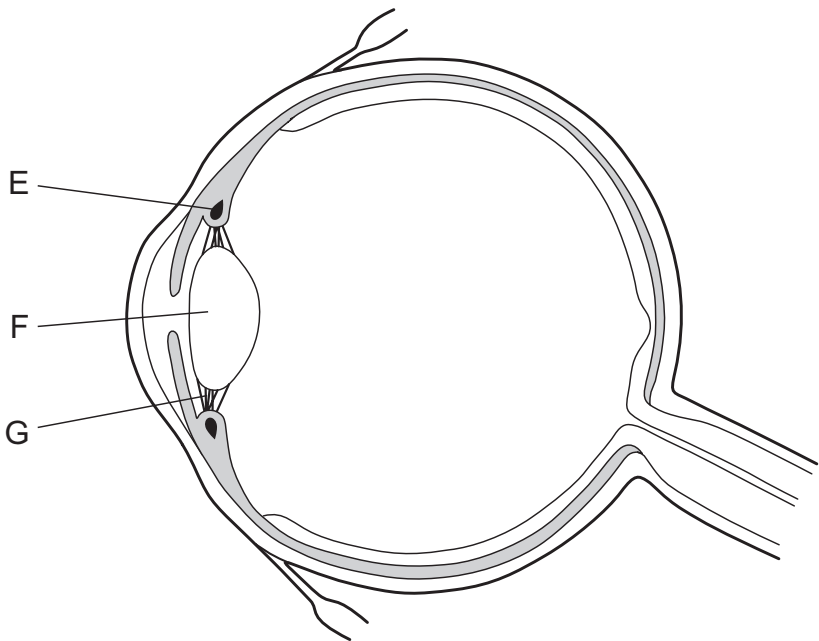
24 The diagram shows a vertical section through part of a human eye. A fly is coming nearer to the eye. The eye begins to focus the image of the fly on the retina.



How do the labelled parts of the diagram change?

	Q	R	S
A	contracts	becomes thinner	becomes tighter
B	relaxes	becomes fatter	becomes slacker
C	contracts	becomes fatter	becomes slacker
D	relaxes	becomes thinner	becomes tighter

24 The diagram shows a cross-section of an eye.



Which row is correct when a person views a near object?

	E	F	G	refraction
A	contracts	becomes thinner	pulled less	more
B	contracts	becomes thicker	pulled less	more
C	relaxes	becomes thinner	pulled less	less
D	relaxes	becomes thicker	pulled more	less

2

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

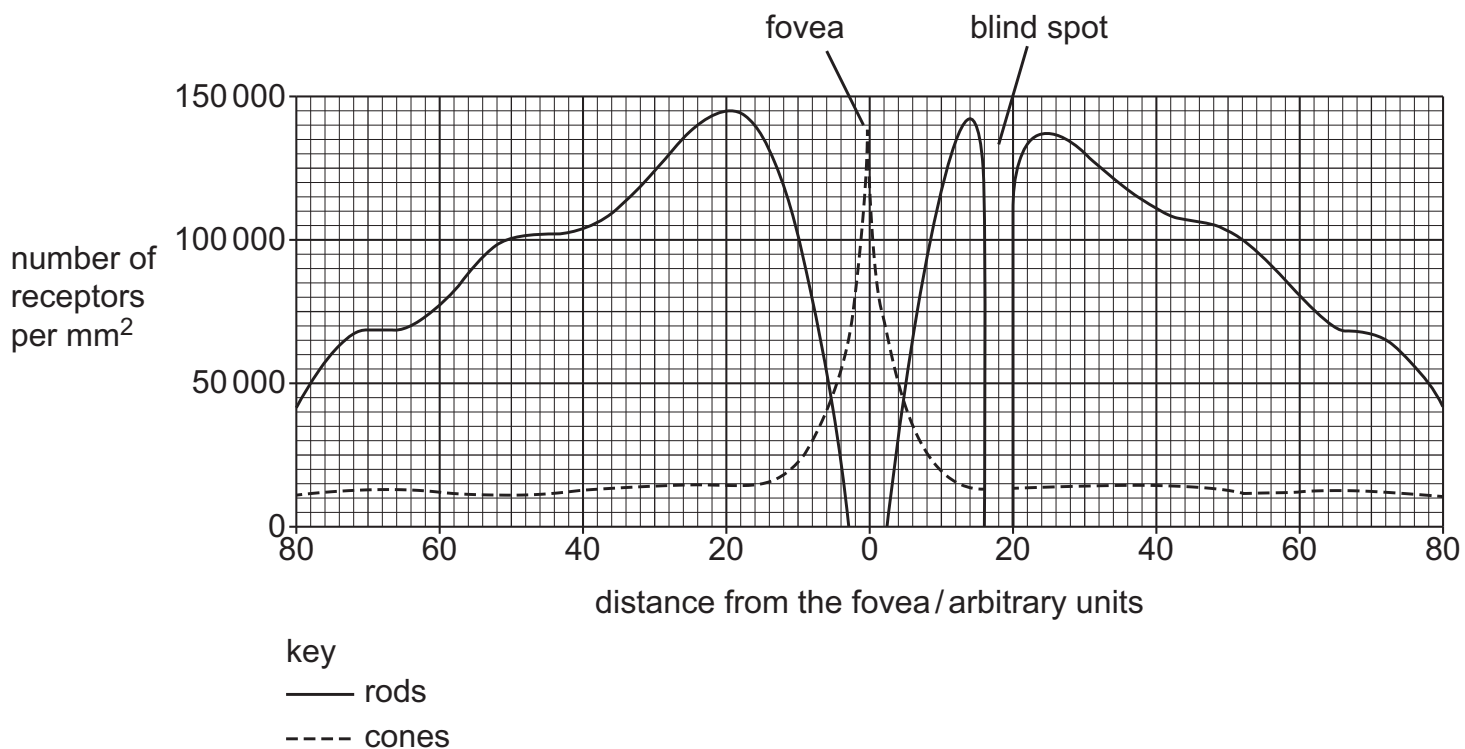


Fig. 2.1

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

[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.

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[1]

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

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[1]

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

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[1]

- (d) The optic nerve contains many neurones.

Fig. 2.2 shows a synapse between two neurones.

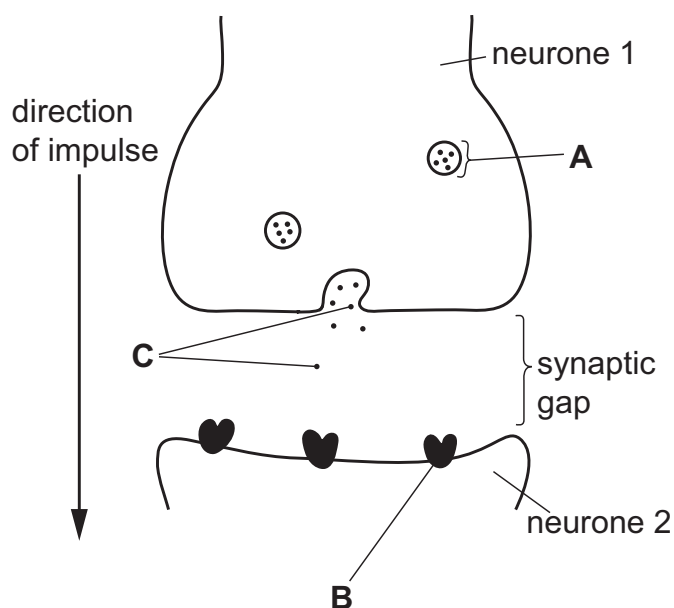


Fig. 2.2

- (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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[Total: 14]