14. Coordination and response

14.2 Sense organs

Paper 1 and 2

Question Paper

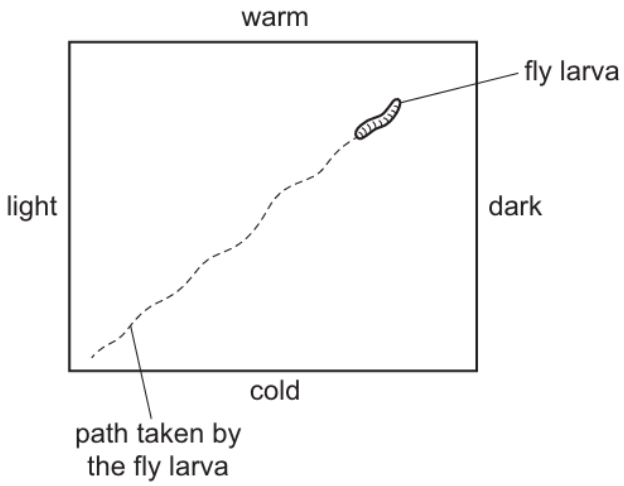
Paper 1

Questions are applicable for both core and extended candidates

1 A student exposed a fly larva to light and temperature gradients.

They lit the area from one side and made one side of the area warmer than the other.

They traced the path of the fly larva's movement.



Which statement describes the response of the fly larva?

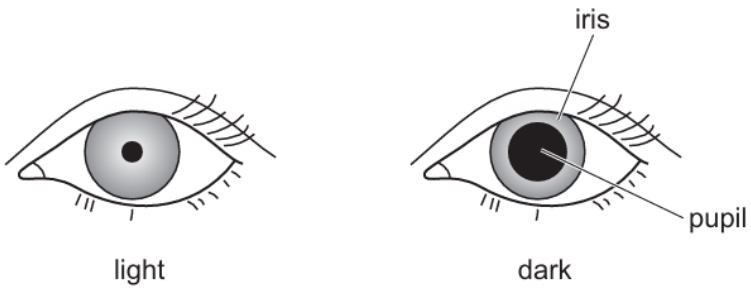
A The fly larva does **not** respond to temperature or light intensity.

B The fly larva moves away from a higher temperature and a higher light intensity.

C The fly larva moves away from a higher temperature and towards a higher light intensity.

D The fly larva moves towards a higher temperature and away from a higher light intensity.

2 The diagram shows an iris and a pupil in different light conditions.



Which characteristic of living organisms is this an example of?

A growth

B movement

C excretion

D sensitivity

3 Which part of the eye contains light receptors?

A cornea

B iris

C lens

D retina

4 Which part of the eye detects red light?

A cornea

B iris

C optic nerve

D retina

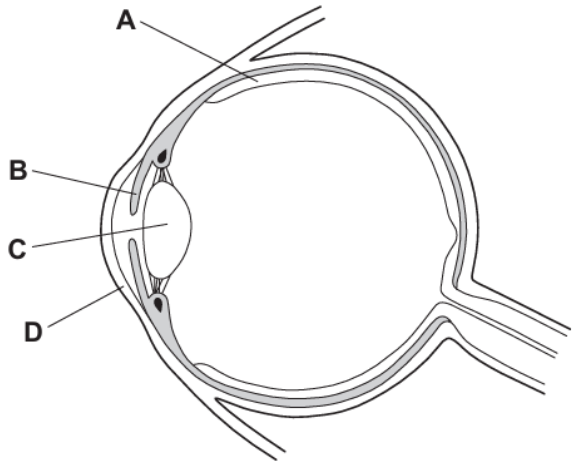
5 Changes in light intensity cause changes in the diameter of the pupil in the eye.

Which rows show the pupil reflex?

	light intensity	pupil diameter
1	high	increases
2	high	decreases
3	low	increases
4	low	decreases

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

6 Which structure can reduce how much light enters the eye?



7 Which part of the eye refracts light?

A cornea

B iris

C pupil

D retina

8 Which hormone triggers the 'fight or flight' response?

A testosterone

B oestrogen

C adrenaline

D insulin

9 A student investigated the effect of changing light intensity on pupil diameter in the eye.

The table shows the results.

starting pupil diameter / mm	final pupil diameter / mm
8	2

Which explanation for the student's results is correct?

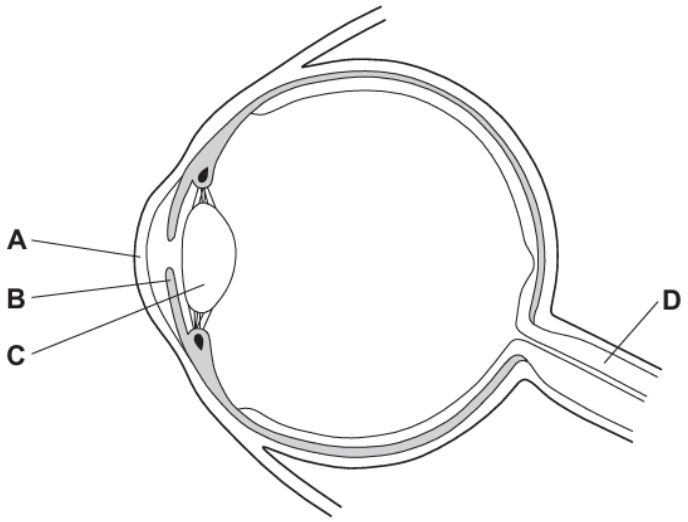
A A reduced light intensity reduced the pupil diameter by 75%.

B A reduced light intensity reduced the pupil diameter by 25%.

C An increased light intensity reduced the pupil diameter by 75%.

D An increased light intensity reduced the pupil diameter by 25%.

10 What controls how much light enters the eye?



11 A person's iris is damaged.

What is the effect of this?

A Nerve impulses from the eye cannot reach the brain.

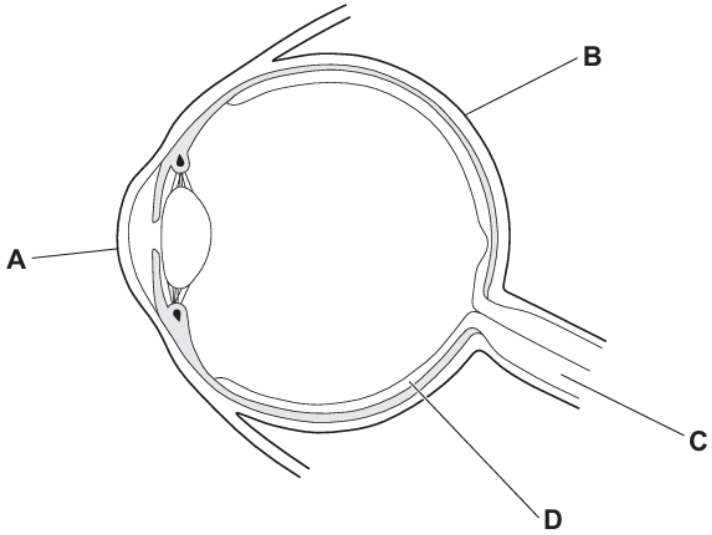
B The person cannot control how much light enters the eye.

C The person cannot focus light onto the retina.

D Receptors do not produce nerve impulses in response to light.

12 The diagram shows an eye.

Which labelled part contains cells that are sensitive to light?



13 What is the function of the optic nerve?

A to carry impulses from the brain to the retina

B to carry impulses from the retina to the brain

C to carry light from the brain to the retina

D to carry light from the retina to the brain

14 Which part of the eye focuses light?

A cornea

B iris

C lens

D retina

15 Which type of cell is found in sense organs?

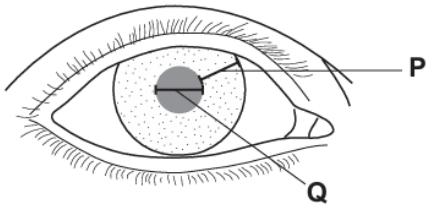
A ciliated

B effector

C receptor

D palisade

16 The diagram shows the eye of a person in a brightly-lit room.



What happens to distance **P** and distance **Q** when this person moves from the brightly-lit room into a dark room?

	distance **P**	distance **Q**
A	decreases	increases
B	decreases	stays the same
C	increases	decreases
D	stays the same	increases

17 Some structures in the eye are listed.

1 cornea

2 iris

3 lens

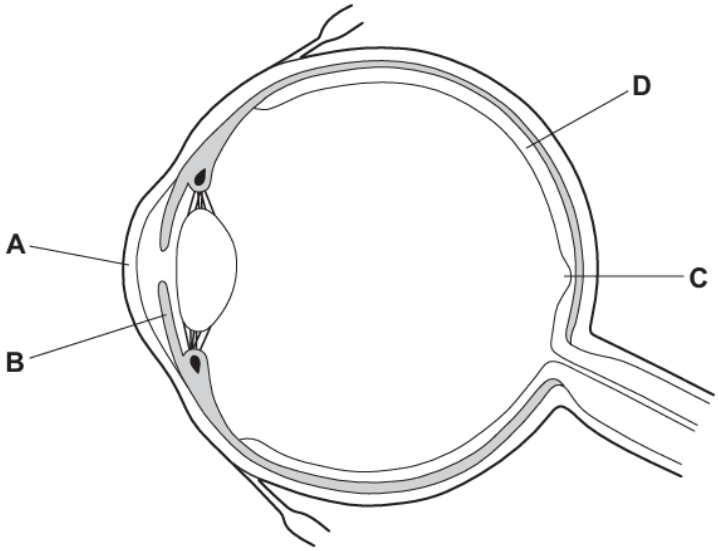
4 retina

Which structures contain light receptors?

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

18 The diagram shows the structure of the eye.

Which structure refracts light?



Paper 2

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

19 What would be the pupil size and lens shape of a person reading a mobile phone text message in a brightly lit room? **(extended only)**

	pupil size	lens shape
A	large	fat
B	large	thin
C	small	fat
D	small	thin

20 Which responses occur in the iris of the eye when a person walks from a brightly lit area to a dimly lit area? **(extended only)**

	circular muscles	radial muscles
A	contract	contract
B	contract	relax
C	relax	contract
D	relax	relax

21 Which statement about rods and cones in the eye is correct? **(extended only)**

A Both rods and cones detect different colours of light.

B Only cones are present in the blind spot.

C Rods are more sensitive than cones in low light intensity.

D There are three types of rods but only one type of cone.

22 What occurs during accommodation to focus on distant objects? **(extended only)**

	ciliary muscle	lens shape	suspensory ligaments
A	contracts	fat	slack
B	relaxes	thin	tight
C	contracts	fat	tight
D	relaxes	thin	slack

23 During the pupil reflex in bright light, what describes the actions of the muscles in the iris? **(extended only)**

A The circular muscles of the iris contract and the radial muscles relax.

B The circular muscles of the iris contract and the radial muscles contract.

C The circular muscles of the iris relax and the radial muscles contract.

D The circular muscles of the iris relax and the radial muscles relax.

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

25 When we read a book, our eyes accommodate to view near objects.

Which statement is correct when viewing a near object? **(extended only)**

A ciliary muscle contracts, suspensory ligaments are slack, lens is thicker

B ciliary muscle contracts, suspensory ligaments are tense, lens is thinner

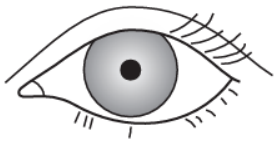
C ciliary muscle relaxes, suspensory ligaments are slack, lens is thinner

D ciliary muscle relaxes, suspensory ligaments are tense, lens is thicker

26 Which row shows the pupil reflex in bright light? **(extended only)**

	muscles in iris		size of pupil
	circular	radial	
A	contracts	relaxes	larger
B	contracts	relaxes	smaller
C	relaxes	contracts	larger
D	relaxes	contracts	smaller

27 The diagram shows the appearance of an eye when in bright light.



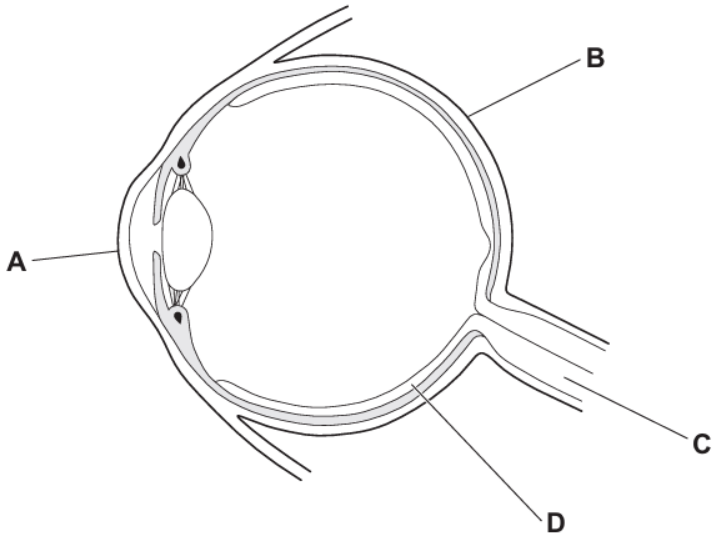
bright light

Which row gives the correct states of the iris muscles in bright light? **(extended only)**

	radial muscles	circular muscles
A	contracted	contracted
B	contracted	relaxed
C	relaxed	contracted
D	relaxed	relaxed

28 The diagram shows an eye.

Which labelled part contains cells that are sensitive to light? **(extended only)**



29 Which row shows the actions needed for the eye to focus on a distant object? **(extended only)**

	ciliary muscles	suspensory ligaments	lens becomes
A	contract	slacken	thicker
B	relax	slacken	thicker
C	contract	tighten	thinner
D	relax	tighten	thinner

30 Which responses occur in the iris of the eye when a person walks from a brightly lit area to a dimly lit area? **(extended only)**

	circular muscle	radial muscle
A	contract	contract
B	contract	relax
C	relax	contract
D	relax	relax

31 Which statement about light receptors in the retina of a normal human eye is correct? **(extended only)**

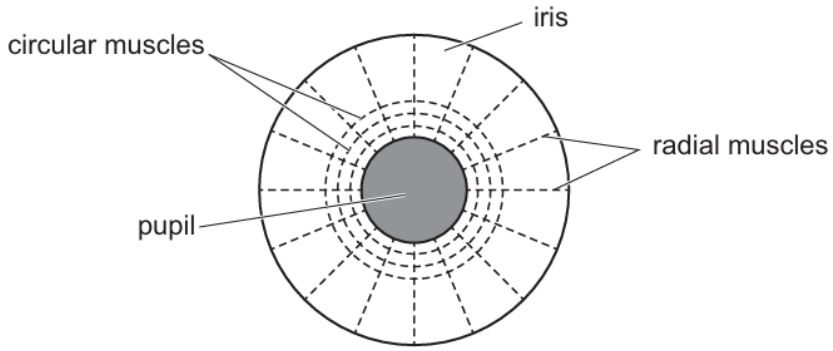
A The cones only work in dim light.

B The rods are found in the fovea.

C There are three types of cone.

D There are three types of rod.

32 The diagram shows the muscles that control the size of the pupil in an eye.



How do the muscles make the pupil smaller? **(extended only)**

	circular muscles	radial muscles
A	contract	contract
B	contract	relax
C	relax	contract
D	relax	relax