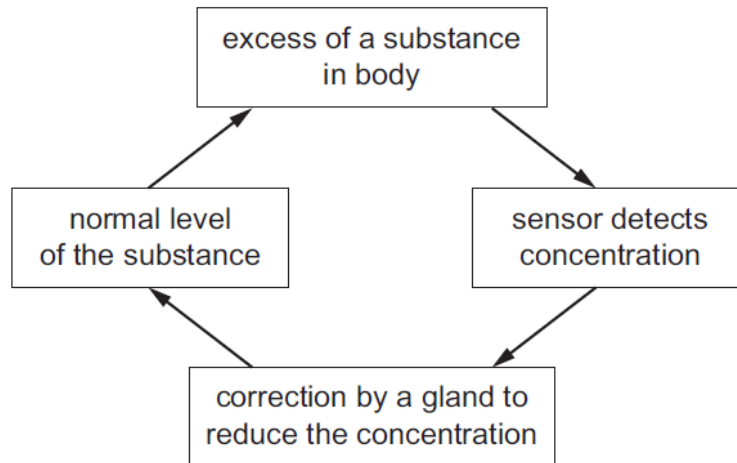


Coordination and Control – 2021 O Level 5090**1. Nov/2021/Paper_11/No.20**

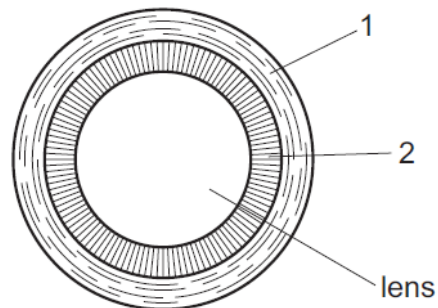
Which biological process is represented in the diagram?



- A** antagonistic action
- B** dialysis
- C** negative feedback
- D** reflex action

2. Nov/2021/Paper_11/No.21

The diagram shows a front view of the parts of the eye involved in producing a focused image of near and distant objects.

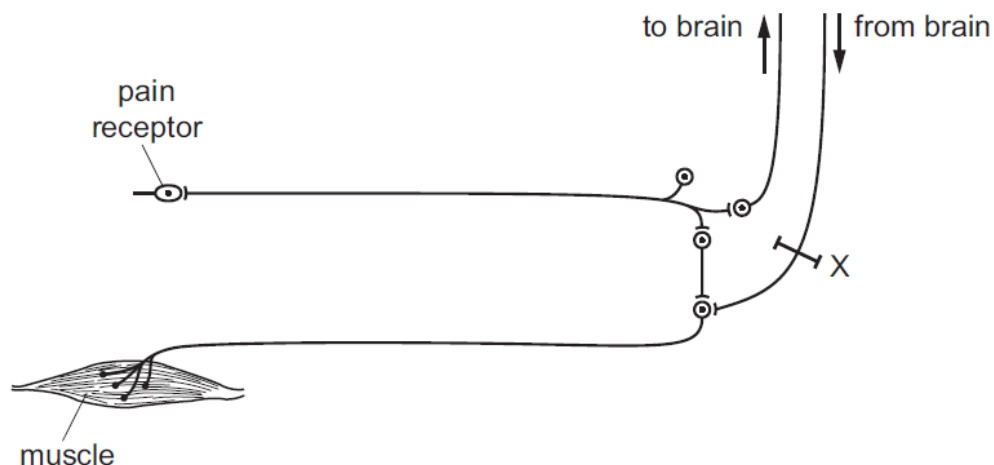


What are structures 1 and 2?

	structure 1	structure 2
A	ciliary muscles	suspensory ligaments
B	iris	pupil
C	pupil	iris
D	suspensory ligaments	ciliary muscles

3. Nov/2021/Paper_11/No.22

The diagram shows some of the nerve pathways associated with a reflex action.



If the pathway at X is damaged, how does this affect the reflex?

- A The person will not be aware that the reflex is occurring.
- B The reflex cannot be controlled consciously.
- C The response will occur without any stimulus.
- D There is no response to the stimulus.

4. Nov/2021/Paper_11/No.23

Which statements about hormones are correct?

- 1 Insulin is made in the pancreas and increases the concentration of glucose in the blood.
- 2 Adrenaline lowers the amount of glucose in the blood after a meal.
- 3 Insulin is used to treat people with diabetes mellitus.

- A 1, 2 and 3
- B 1 and 2 only
- C 2 only
- D 3 only

5. Nov/2021/Paper_11/No.25

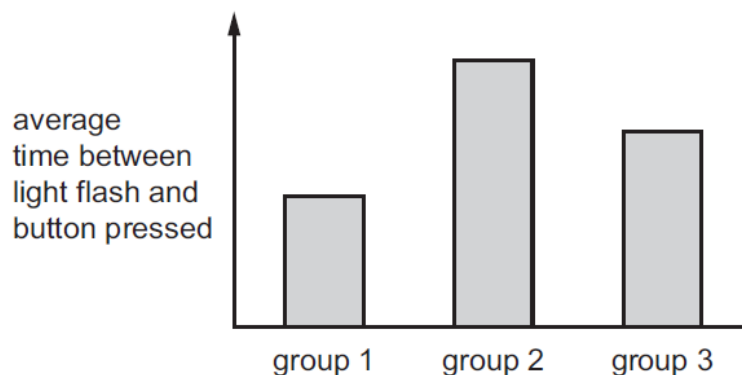
An investigation into reaction times involved three similar large groups of adults. Each adult had to press a button as soon as they saw a light flash. The time between the light coming on and the button being pressed was measured.

Group 1 did the task 30 minutes after smoking a cigarette.

Group 2 did the task 30 minutes after drinking 2 units of alcohol.

Group 3 was the control group. The control group did not smoke or drink alcohol.

The graph shows the results of this investigation.

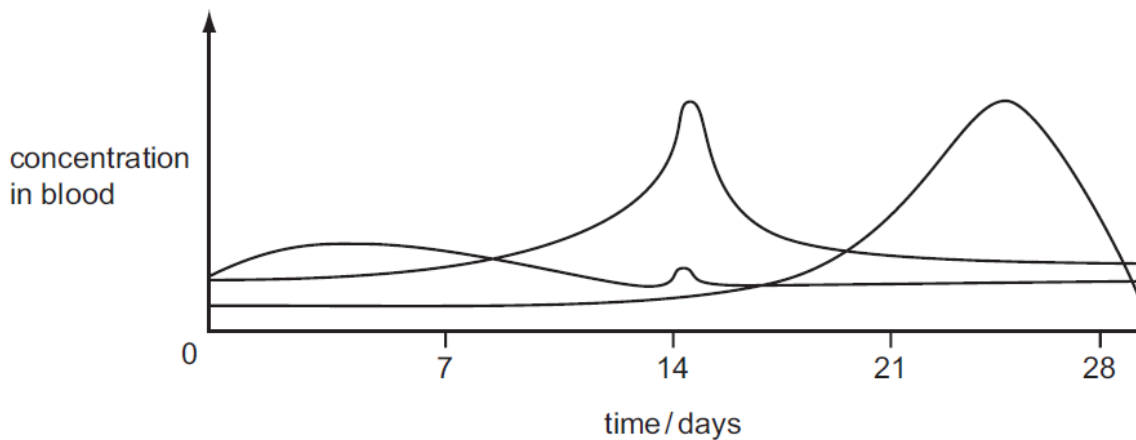


What is the best conclusion from the data?

- A** Nicotine is a depressant and alcohol is a stimulant.
- B** Nicotine reduces reaction times and alcohol increases reaction times.
- C** Nicotine makes reactions slower and alcohol makes reactions faster.
- D** Nicotine and alcohol are both addictive.

6. Nov/2021/Paper_11/No.35

The graph shows the concentration in the blood of three of the four hormones FSH, LH, oestrogen and progesterone during a menstrual cycle.



Which hormone is **not** shown?

- A FSH
- B LH
- C oestrogen
- D progesterone

7. Nov/2021/Paper_12/No.20

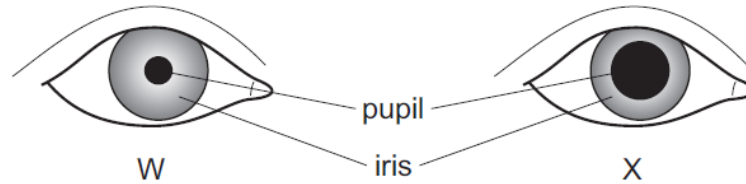
After exercise, human body temperature often rises above normal.

What will help to return the temperature to normal?

- A an increase in the fat layer under the skin
- B a hormonal response causing shivering
- C a positive feedback mechanism
- D dilation of blood vessels in the skin

8. Nov/2021/Paper_12/No.21

The diagrams show the front view of the pupil and iris of the eye in different light intensities.

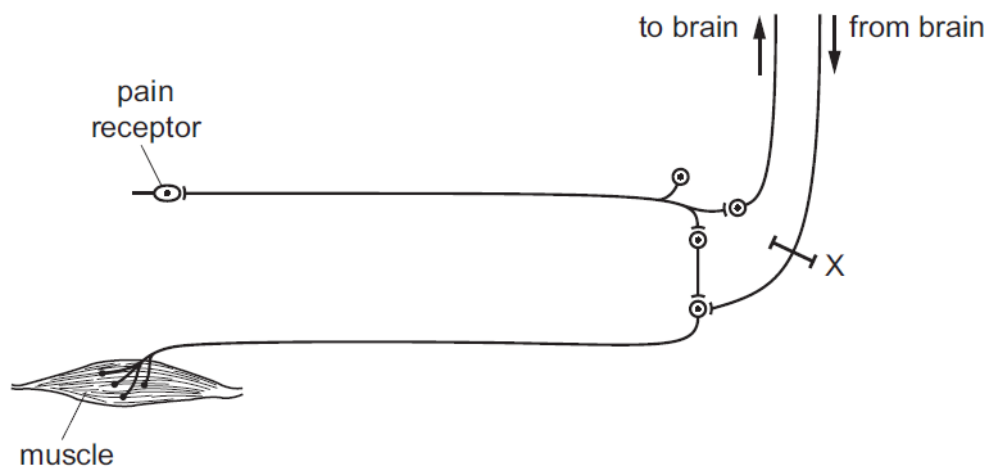


Which row correctly describes diagram X?

	eye is in	circular muscles of the iris are	radial muscles of the iris are
A	bright light	relaxed	contracted
B	bright light	contracted	relaxed
C	dim light	relaxed	contracted
D	dim light	contracted	relaxed

9. Nov/2021/Paper_12/No.22

The diagram shows some of the nerve pathways associated with a reflex action.



If the pathway at X is damaged, how does this affect the reflex?

- A** The person will not be aware that the reflex is occurring.
- B** The reflex cannot be controlled consciously.
- C** The response will occur without any stimulus.
- D** There is no response to the stimulus.

10. Nov/2021/Paper_12/No.23

What occurs after an injection of insulin?

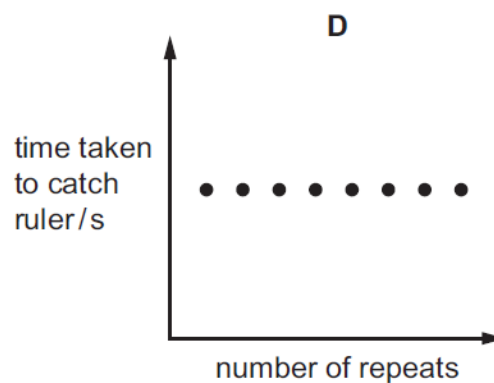
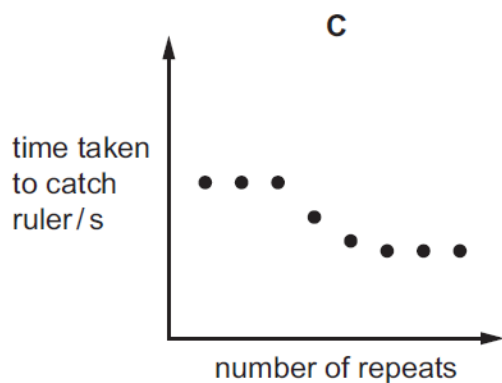
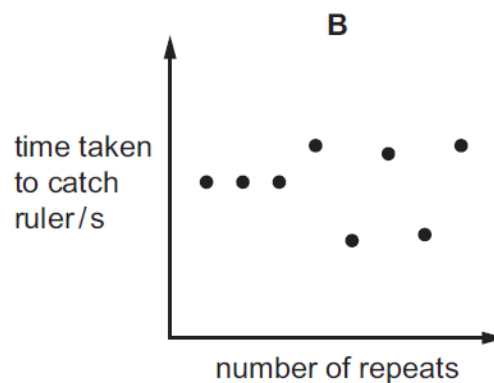
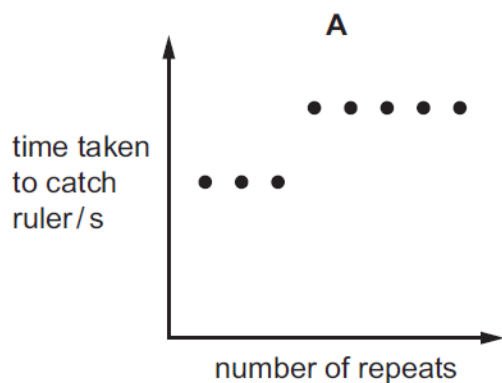
- A More adrenaline is released into the blood.
- B More glycogen is released from the liver.
- C The blood glucose concentration increases.
- D The production of glycogen increases.

11. Nov/2021/Paper_12/No.25

In an experiment, a person tested their reactions by measuring the time taken to catch a ruler that was dropped by another person.

They then repeated the test some time after drinking alcohol.

Which graph shows their results?



12. Nov/2021/Paper_21/No.3

A man is cooking in a hot kitchen and sweat is being released by sweat glands in his skin.

(a) (i) Explain the term homeostasis with reference to sweating.

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..... [2]

(ii) Explain how receptors and blood vessels in the man's skin are also involved in homeostasis when he is in the hot kitchen.

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..... [4]

(b) Sweat contains very small quantities of the waste product urea.

State the name of the organ where most urea is made in the body.

..... [1]

- (c) The table shows the concentrations of some chemicals found in the sweat, urine and blood plasma of a healthy human.

chemical	concentration of chemical / mmol per dm ³		
	sweat	urine	blood plasma
urea	22	393	6
sodium	66	110	141
chloride	59	103	99

- (i) Use the data in the table to compare the chemical composition of urine and blood plasma.

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..... [4]

- (ii) A patient has kidney disease and is about to start dialysis treatment.

Suggest and explain the concentration of urea in the sweat of the patient compared to that of a person who does not have kidney disease.

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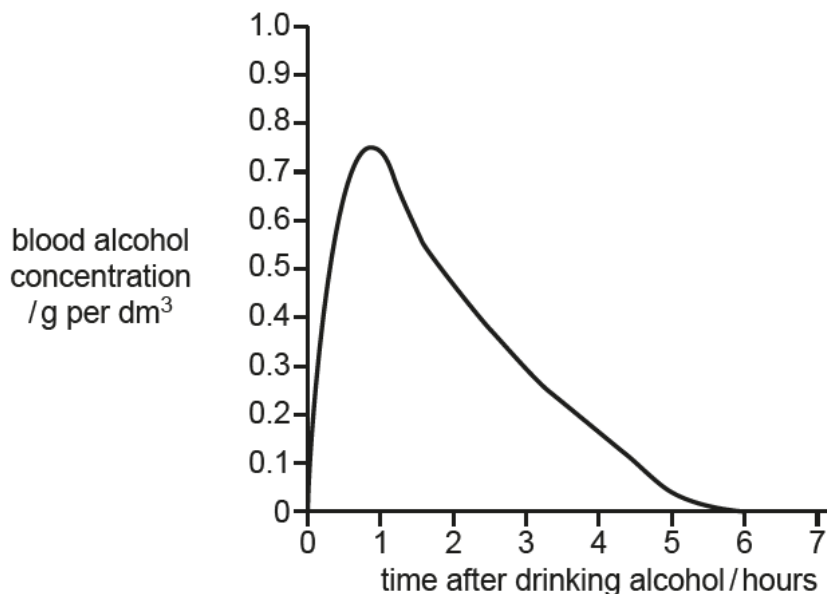
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..... [3]

[Total: 14]

13. Nov/2021/Paper_21/No.5

The graph shows how blood alcohol concentration changes after a person drinks alcohol.



- (a) Suggest how the shape of the graph can be explained by what happens in parts of the body after drinking alcohol.

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..... [4]

(b) The graph shows that the highest blood alcohol concentration for this person after drinking alcohol is 0.75g per dm³.

Suggest **two** reasons why the highest blood alcohol concentration may be different for two people after drinking the same volume of alcohol.

1

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2

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[2]

(c) Describe the short-term effects of a high blood alcohol concentration.

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..... [3]

[Total: 9]

14. Nov/2021/Paper_22/No.8

(a) Define the term *drug*.

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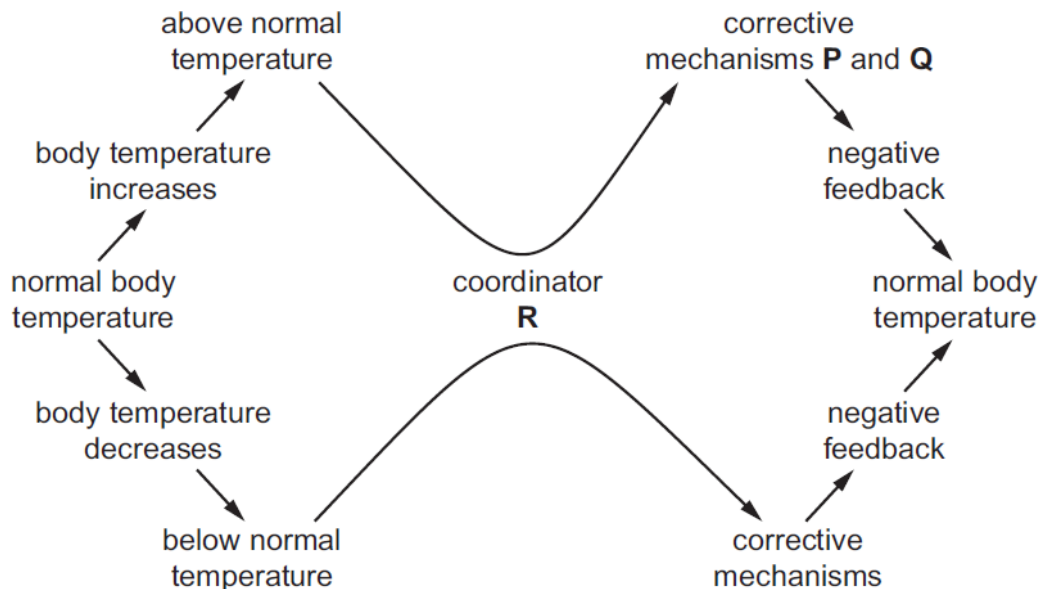
(b) Describe the possible effects of abuse of a **named** drug.

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..... [7]

[Total: 10]

15. Jun/2021/Paper_11/No.20

The diagram shows the homeostatic control of body temperature.



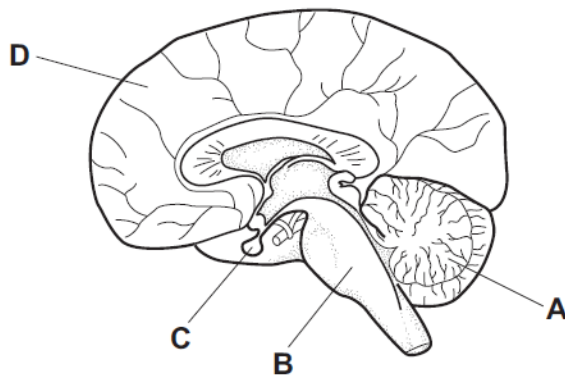
What are corrective mechanisms **P** and **Q** and coordinator **R**?

	corrective mechanisms		coordinator R
	P	Q	
A	sweating	more blood flows close to the skin surface	brain
B	sweating	more blood flows close to the skin surface	skin
C	shivering	less blood flows close to the skin surface	brain
D	shivering	less blood flows close to the skin surface	skin

16. Jun/2021/Paper_11/No.21

The diagram shows a section through the brain.

Which part of the brain secretes hormones?



17. Jun/2021/Paper_11/No.22

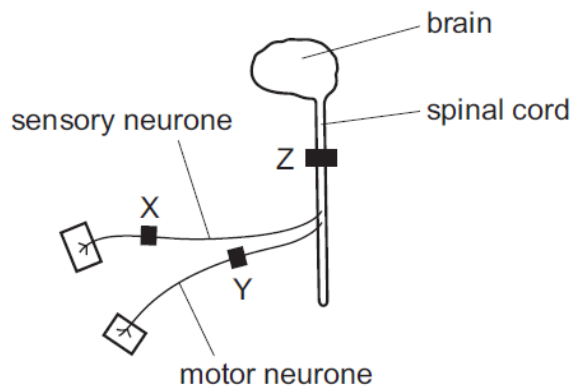
Which changes occur in the eye when viewing a distant object?

- 1 The ciliary muscles contract.
- 2 The ciliary muscles relax.
- 3 The suspensory ligaments are pulled tight.
- 4 The suspensory ligaments are slackened.

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

18. Jun/2021/Paper_11/No.23

The diagram shows three positions, X, Y and Z, where nerve impulses are blocked by a drug.



Which person listed below moves their leg in response to a pinprick, but does **not** feel it?

- A a person with a block at X
- B a person with a block at Y
- C a person with a block at Z
- D a person with no block

19. Jun/2021/Paper_11/No.24

Which pair of bones form a hinge joint in the forelimb?

- A humerus and scapula
- B radius and ulna
- C scapula and radius
- D ulna and humerus

20. Jun/2021/Paper_11/No.25

What are the effects of drinking a large quantity of alcohol on the human body?

	effects on the body		
	acts as a	reaction time	damages the
A	depressant	decreases	kidney
B	depressant	increases	liver
C	stimulant	increases	kidney
D	stimulant	decreases	liver

21. Jun/2021/Paper_12/No.20

Which response will happen if a person walks into a cold environment?

- A** Hair erector muscles cause the body hairs to lay flat on the skin.
- B** More blood flows in the capillaries near the surface of the skin.
- C** Large body muscles contract and relax rapidly.
- D** The sweat glands produce a larger amount of sweat.

22. Jun/2021/Paper_12/No.21

The diagram shows the human brain.



What is the name of the shaded part of the brain?

- A** cerebellum
- B** cerebrum
- C** hypothalamus
- D** medulla

23. Jun/2021/Paper_12/No.22

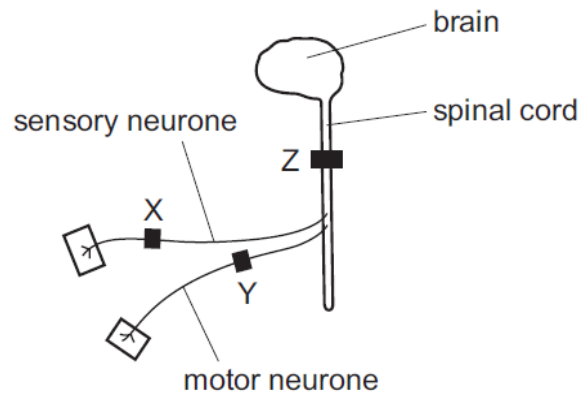
What happens in the eye to produce the pupil reflex to bright light?

- 1 ciliary muscle contraction
- 2 circular muscle contraction
- 3 radial muscle relaxation
- 4 suspensory ligaments pulled tight

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

24. Jun/2021/Paper_12/No.23

The diagram shows three positions, X, Y and Z, where nerve impulses are blocked by a drug.

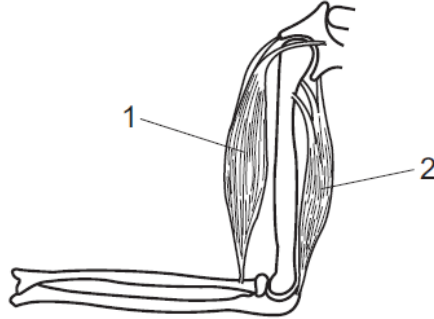


Which person listed below moves their leg in response to a pinprick, but does **not** feel it?

- A** a person with a block at X
- B** a person with a block at Y
- C** a person with a block at Z
- D** a person with no block

25. Jun/2021/Paper_12/No.24

The diagram shows how antagonistic muscles are arranged in the arm.



Which row describes the muscle action when the arm is straightened?

	muscle 1	muscle 2
A	contracts	expands
B	contracts	relaxes
C	expands	contracts
D	relaxes	contracts

26. Jun/2021/Paper_12/No.25

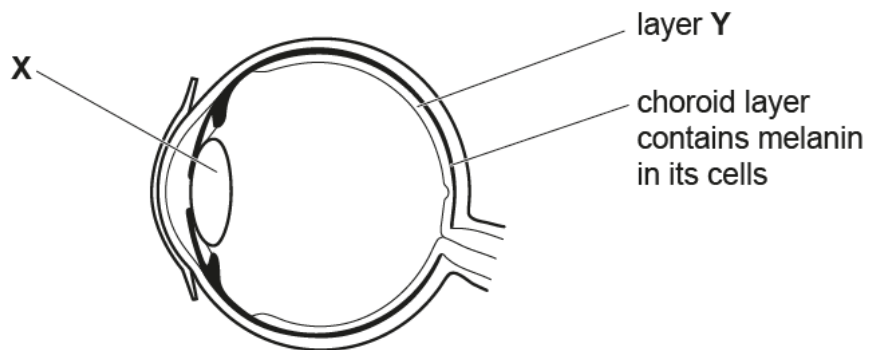
Electronic cigarettes are a cigarette substitute allowing nicotine to be inhaled without the other components found in cigarette smoke.

Which effects of cigarette smoking will also be effects of using electronic cigarettes?

- A** Smoking increases heart rate, narrows the arterioles and increases blood pressure.
- B** Smoking irritates the airways and increases mucus production.
- C** Smoking reduces oxygen carried by red blood cells and reduces oxygen delivered to the tissues.
- D** Smoking narrows the airways and increases coughing.

27. Jun/2021/Paper_21/No.2

A person visits an eye doctor to have an eye test. On the wall of the doctor's room is a diagram of an eye.



(a) (i) Name the part labelled X.

..... [1]

(ii) Describe **one** way in which the structure of X is related to its function.

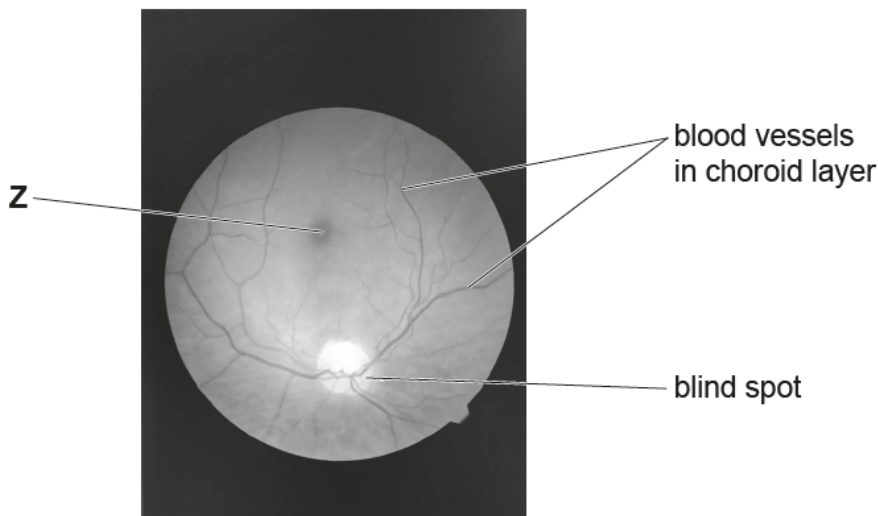
.....

 [2]

(iii) Name layer Y.

..... [1]

(b) As part of the eye test, the doctor shines a bright light into the eye and takes a picture. The picture shows layer Y and the choroid layer behind it.



(i) Name structure Z.

.....

[1]

(ii) Layer Y does not contain blood vessels.
Explain how the blood vessels in the choroid layer are important for layer Y.

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..... [4]

(c) When the bright light is shone into the eye there is a pupil reflex which causes the pupil to become smaller.

Explain how named parts of the eye and of the nervous system are involved in this pupil reflex.

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..... [4]

- (d) Some people inherit a condition which prevents the production of the dark pigment melanin in their choroid and skin cells. The gene involved has two alleles, **A** (dominant) and **a** (recessive). Only people with two recessive alleles have this condition.

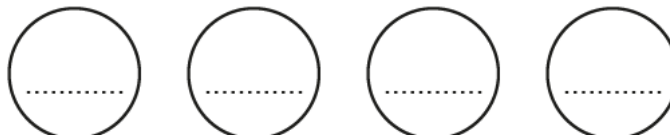
Two people, each with a heterozygous genotype, have children together.

- (i) Complete the genetic diagram to show the possible genotypes and phenotypes of the children.

genotypes of parents

..... ×

gametes



possible genotypes of children

possible phenotypes of children

[4]

- (ii) State the probability of these two people having a child who does **not** produce melanin.

.....

[1]

[Total: 18]

28. Jun/2021/Paper_21/No.7

(a) Excess amino acids are broken down in liver cells to form molecules of urea.

Describe the pathway taken by a molecule of urea, from the liver of a mammal until it reaches the soil.

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..... [7]

(b) Urea is a molecule which contains nitrogen.
Suggest why it is important that molecules that contain nitrogen are added to the soil.

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..... [3]

[Total: 10]

