Coordination and response – 2020 IGCSE 0610

1. March/2020/Paper_12/No.26

The table shows some of the responses that occur in humans when body temperature changes.

Which row shows the responses that occur when the body temperature increases **above** normal?

	hair lies flat	shivering	sweating
A	✓	✓	✗
B	✓	✗	✓
C	✗	✓	✓
D	✓	✓	✓

key

✓ = yes

✗ = no

2. March/2020/Paper_12/No.27

What is an example of phototropism?

A a chemical messenger produced by a plant

B a painful sensation in response to a stimulus

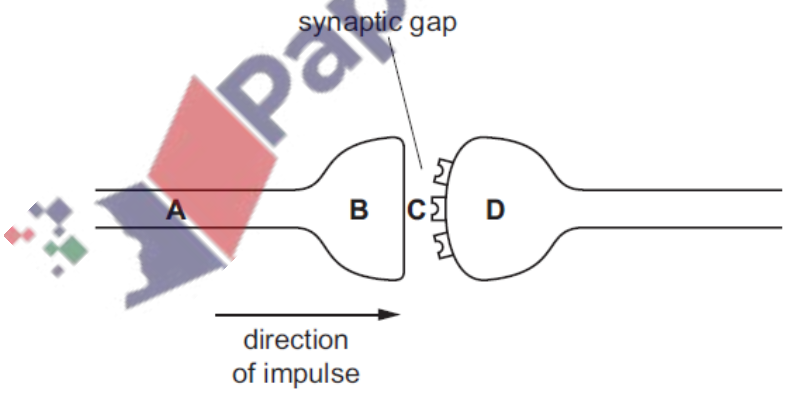
C the growth of a plant root towards the centre of the Earth

D the growth of a plant shoot towards light

3. March/2020/Paper_22/No.26

The diagram shows a synapse.

Where are vesicles containing neurotransmitter molecules found?



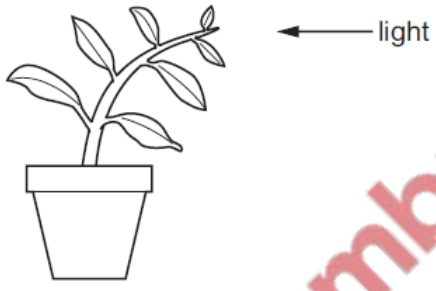
4. March/2020/Paper_22/No.27

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

5. March/2020/Paper_22/No.28

The diagram shows a shoot growing towards light.



Which statement about the role of auxin in phototropism is correct?

A Auxin will move to the dark side of the shoot and cause cells to elongate.

B Auxin will move to the dark side of the shoot and prevent cells from elongating.

C Auxin will move to the light side of the shoot and cause cells to elongate.

D Auxin will move to the light side of the shoot and prevent cells from elongating.

6. March/2020/Paper_42/No.3

(a) One of the characteristics of living organisms is sensitivity.

Define the term sensitivity.

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..... [2]

(b) State the names of **two** sense organs.

1 .....

2 .....

[1]

(c) Scientists investigated the effect of adrenaline on blood glucose concentration in rats.

The rats were put into two groups:

- group **A** was given an injection of adrenaline
- group **B** was given an injection that did **not** contain adrenaline.

The blood glucose concentrations of the rats in both groups were monitored for three hours after the injections.

The rats did not eat for 12 hours before the investigation or while they were being monitored.

The results are shown in Fig. 3.1.

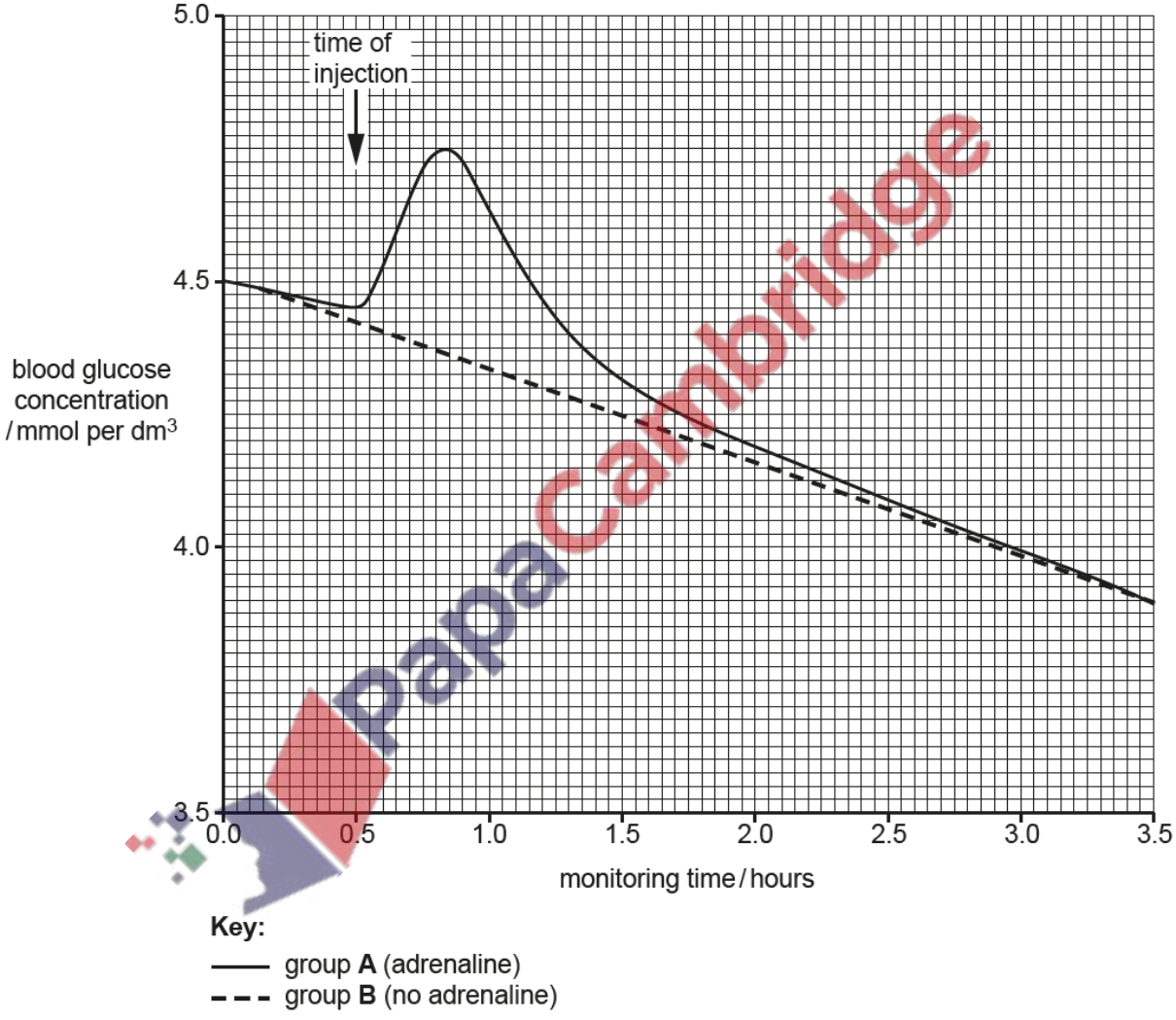

Fig. 3.1

(i) Suggest why group **B** was given an injection that did **not** contain adrenaline.

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..... [2]

(ii) Describe and explain the results shown in Fig. 3.1 for group **A**.

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..... [5]

(d) Another group of rats was given an injection that did **not** contain adrenaline.

These rats were given food after 2 hours of monitoring.

Predict the changes to blood glucose concentration in this group of rats.

Sketch a line to show your prediction on the graph in Fig. 3.1. [2]

(e) Describe **two** effects of adrenaline on the body, **other** than a change in blood glucose concentration.

1 .....

2 .....

[2]

[Total: 14]

7. June/2020/Paper_11/No.22

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

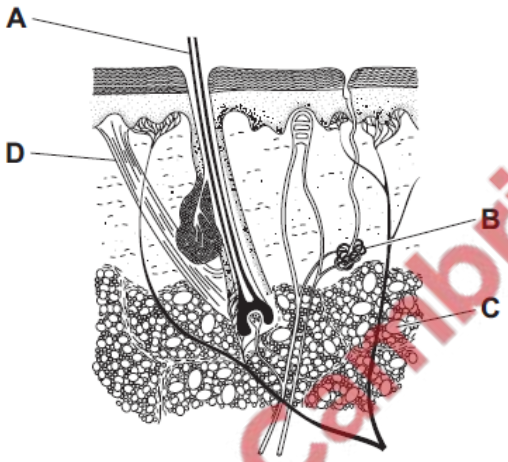
C to carry light from the brain to the retina

D to carry light from the retina to the brain

8. June/2020/Paper_11/No.24

The diagram shows a cross-section of the skin.

Which part produces a substance which cools the skin when it evaporates?



9. June/2020/Paper_11/No.25

Gravitropism and phototropism are names given to specific plant growth responses.

How do shoots and roots normally respond?

	direction of growth of shoots		direction of growth of roots	
	light	gravity	light	gravity
A	towards	away	away	towards
B	away	towards	towards	away
C	towards	away	towards	away
D	away	towards	away	towards

10. June/2020/Paper_22/No.22

Which structure transfers information to the central nervous system?

A effector

B motor neurone

C relay neurone

D sensory neurone

11. June/2020/Paper_22/No.23

Examples of responses to hormones are listed.

1 increased breathing rate

2 increased pulse rate

3 growth of body hair

4 widened pupils

Which responses are caused by the hormone adrenaline?

A 1, 2, 3 and 4

B 1, 2 and 4 only

C 2, 3 and 4 only

D 3 and 4 only

12. June/2020/Paper_22/No.24

Which part of the eye focuses light?

A cornea

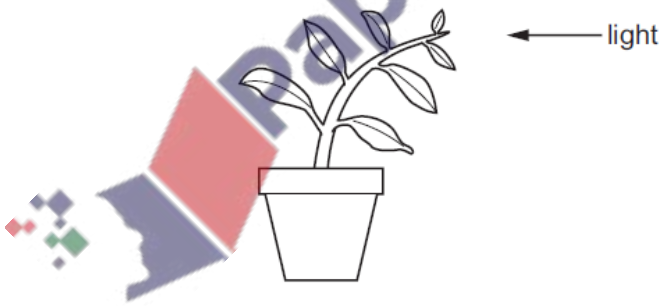
B iris

C lens

D retina

13. June/2020/Paper_22/No.25

The diagram shows a plant shoot growing towards the light.



Which response is shown by the shoot of the plant?

A gravitropism

B photosynthesis

C phototropism

D reflex

14. June/2020/Paper_13/No.22

When a man steps on a sharp object he moves his foot away very quickly.

In which part of his body are the effector cells involved in this action?

A brain

B muscle

C skin

D spinal cord

15. June/2020/Paper_13/No.23

Which row matches structures in the eye with their functions?

	focuses light	refracts light	sensitive to light
A	cornea	iris	retina
B	retina	lens	iris
C	iris	retina	lens
D	lens	cornea	retina

16. June/2020/Paper_13/No.25

What is meant by the term phototropism?

A absorbing mineral ions

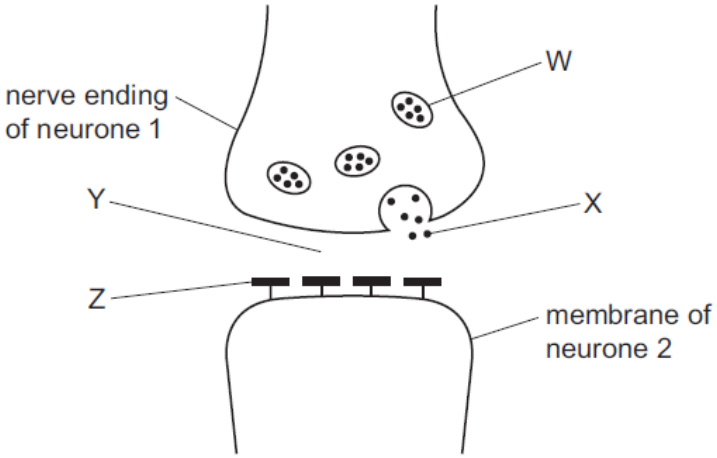
B absorbing water

C directional growth in response to gravity

D directional growth in response to light

17. June/2020/Paper_21/No.24

The diagram shows a synapse.



What are the labelled parts?

	W	X	Y	Z
A	synaptic cleft	neurotransmitter	vesicle	receptor
B	synaptic cleft	receptor	vesicle	neurotransmitter
C	vesicle	neurotransmitter	synaptic cleft	receptor
D	vesicle	receptor	synaptic cleft	neurotransmitter

18. June/2020/Paper_21/No.25

Which row shows the actions needed for the eye to focus on a distant object?

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

19. June/2020/Paper_21/No.26

The liver and the pancreas work together to control the concentration of glucose in the blood.

Which statement is correct?

A The liver converts the small molecule glucose to the large molecule glucagon.

B The liver releases the hormone insulin when blood glucose levels are too high.

C The pancreas does not respond to an increase in blood glucose levels.

D The pancreas responds to a fall in blood glucose by increasing the release of the hormone glucagon.

20. June/2020/Paper_22/No.24

Which responses occur in the iris of the eye when a person walks from a brightly lit area to a dimly lit area?

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

21. June/2020/Paper_22/No.25

Which glands are endocrine glands?

A adrenal, pancreas, testes

B adrenal, ovaries, salivary

C ovaries, sweat, testes

D pancreas, salivary, sweat

22. June/2020/Paper_22/No.26

What are the effects of insulin and adrenaline on the concentration of blood glucose?

	effect of insulin on blood glucose concentration	effect of adrenaline on blood glucose concentration
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

23. June/2020/Paper_23/No.22

Blood glucose level is kept between 5–7 mmol per dm^3. The concentration of glucose in the intestine varies and is often less than that value.

What would be required for the absorption of glucose into the blood when the concentration of glucose in the intestine is less than 5 mmol per dm^3?

1 mitochondria

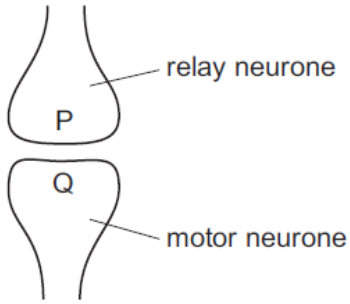
2 oxygen

3 membrane proteins

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

24. June/2020/Paper_23/No.23

The diagram shows a synapse between a motor neurone and a relay neurone.



What passes from P to Q?

A an electrical impulse

B an enzyme

C a hormone

D a neurotransmitter

25. June/2020/Paper_23/No.24

What change occurs in a 'fight or flight' situation?

A constriction of pupils

B decrease in breathing rate

C decrease in pulse rate

D increase in blood glucose concentration

26. June/2020/Paper_23/No.25

What happens when a person enters a very hot room?

A Sweating decreases and vasoconstriction increases.

B Sweating decreases and vasodilation decreases.

C Sweating increases and vasoconstriction increases.

D Sweating increases and vasodilation increases.

27. June/2020/Paper_31/No.8

(a) Fig. 8.1 is a diagram of a section of human skin.

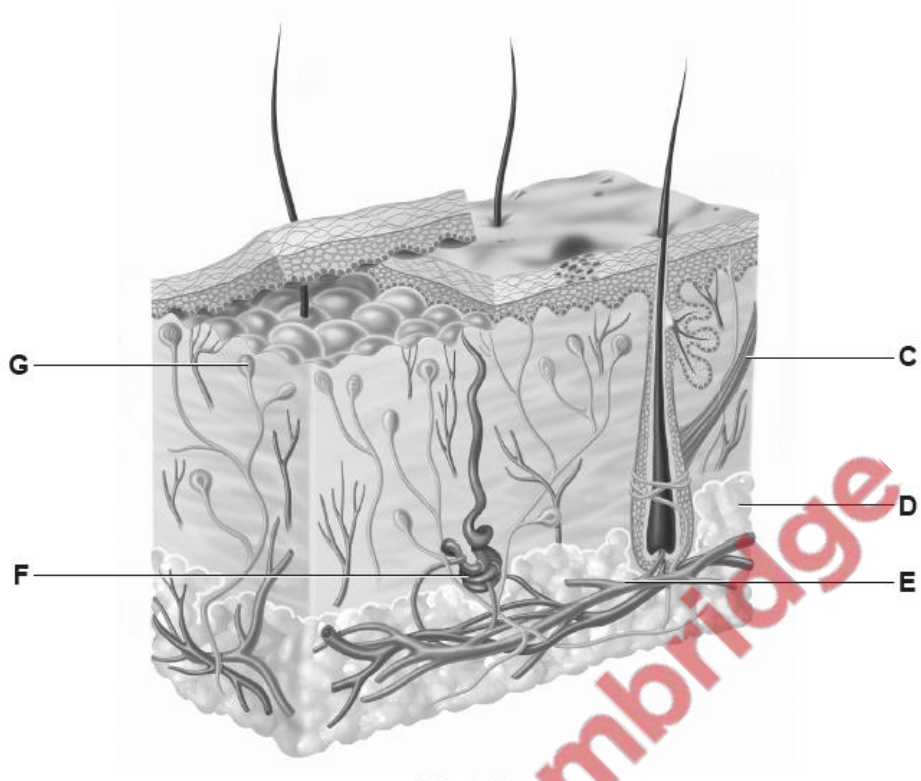


Fig. 8.1

State the names of the structures identified by the labels in Fig. 8.1.

C .....

D .....

E .....

F .....

G .....

[5]

(b) Complete the sentences about temperature control in humans by writing the missing words in the gaps.

If body temperature increases above normal, ... in the ..... detect the rise in temperature and impulses are sent to the skin.

Glands in the skin produce a liquid called ..... . The main component of this liquid is water.

The water in the liquid ..... from the surface of the skin using heat energy from the body. This lowers the body temperature.

The maintenance of a constant body temperature is an example of ..... .

[5]

[Total: 10]

28. June/2020/Paper_31/No.9

The eye is an example of a sense organ.

(a) Define the term *sense organ*.

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..... [2]

(b) Fig. 9.1 shows a section through the eye.

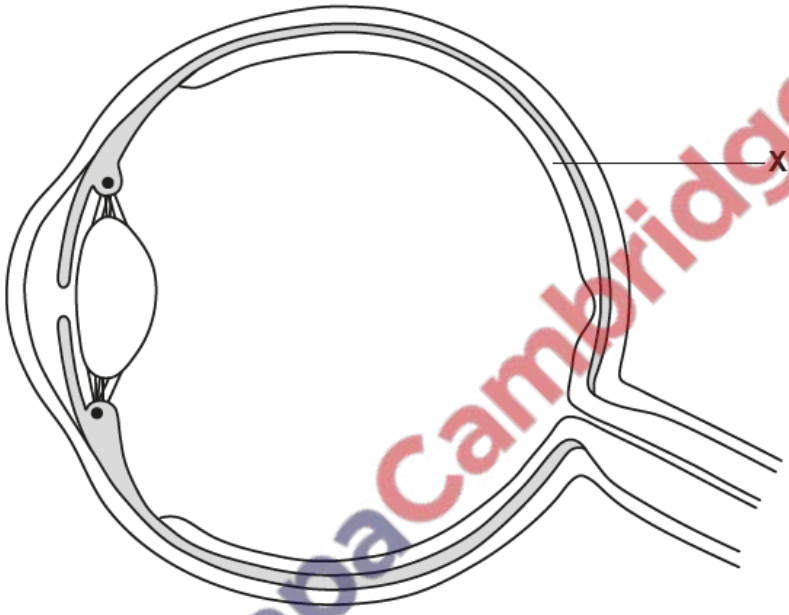

Fig. 9.1

(i) State the name of structure **X** in Fig. 9.1.

..... [1]

(ii) List **three** parts of the eye that light passes through to reach structure **X**.

1 .....

2 .....

3 .....

[3]

(iii) Label the optic nerve **on** Fig. 9.1 by drawing a label line and the letter **N**. [1]

(iv) State the function of the optic nerve.

..... [1]

[Total: 8]

29. June/2020/Paper_42/No.1

Homeostasis is the maintenance of a constant internal environment.

(a) Human skin is involved in the maintenance of a constant internal body temperature.

(i) Skin is an organ.

State why the skin is an organ.

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..... [1]

(ii) State the name of the organ that coordinates the control of body temperature.

..... [1]

Fig. 1.1 shows a diagram of a section through human skin.

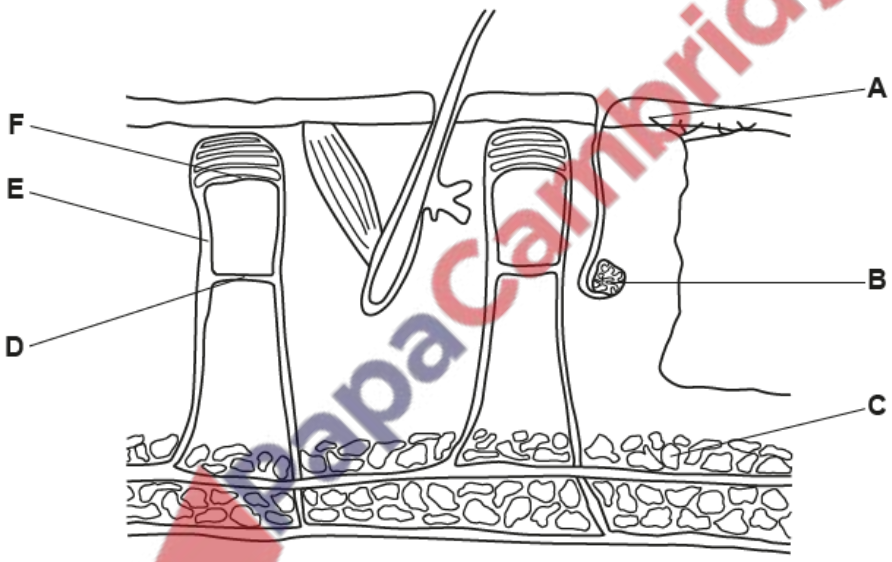

Fig. 1.1

(iii) State the names of structures **A**, **B** and **C** in Fig. 1.1.

A .....

B .....

C .....

[3]

(iv) Structure **D** is a shunt vessel and **E** is an arteriole.

Describe how these blood vessels are involved in maintaining a constant internal body temperature in a cold environment.

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.....

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..... [3]

(b) Energy is used to maintain body temperature.

State **three other** uses of energy in humans.

1 .....

2 .....

3 .....

[3]

[Total: 11]