Coordination and response – 2023 November IGCSE 0610

1. Nov/2023 /Paper_ 0610/11/No.24

Which organ produces insulin?

A adrenal gland

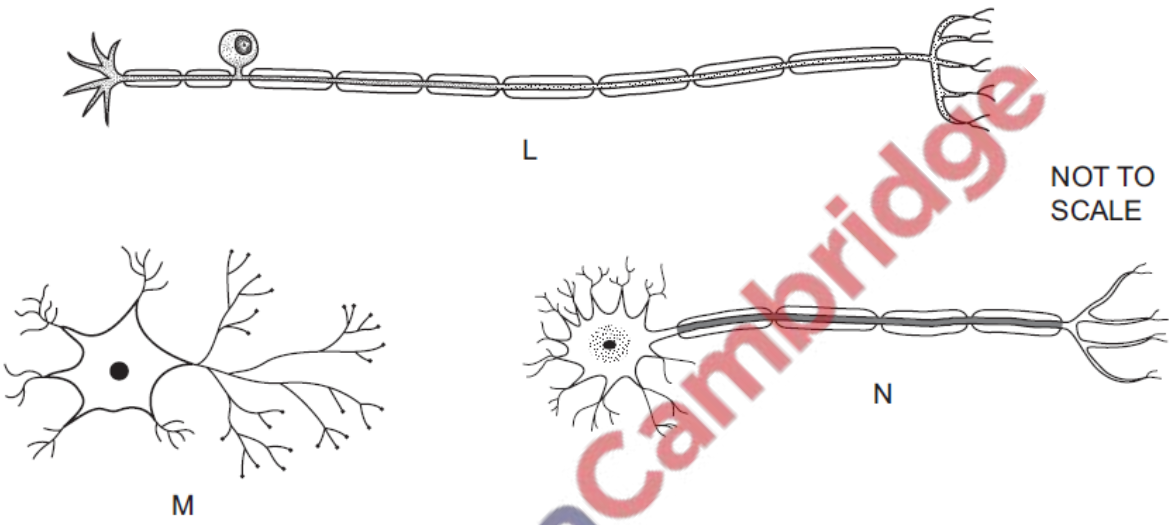
B liver

C ovary

D pancreas

2. Nov/2023 /Paper_ 0610/11/No.26

The diagrams show three types of neurones.



Which sequence shows the direction that impulses will travel during a reflex action?

A L → M → N

B M → L → N

C M → N → L

D N → M → L

3. Nov/2023 /Paper_ 0610/11/No.27

Which part of the eye detects red light?

A cornea

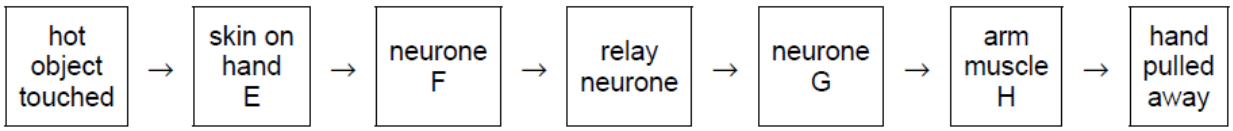
B iris

C optic nerve

D retina

4. Nov/2023 /Paper_ 0610/13/No.26

The diagram shows a reflex action when a person touches a hot object and pulls their hand away.



Which letter correctly identifies a structure?

A E is called the effector.

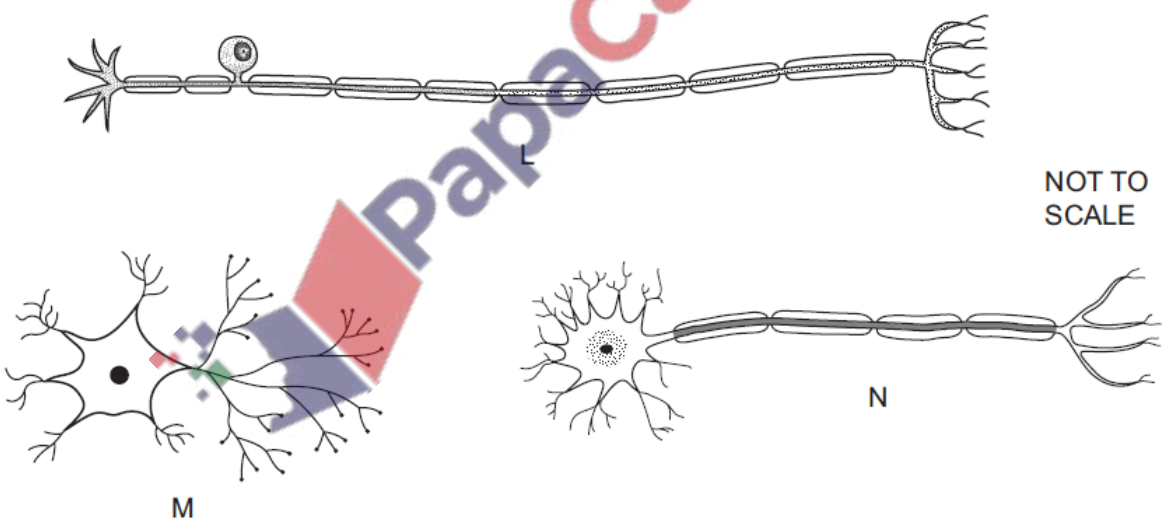
B F is called the motor neurone.

C G is called the motor neurone.

D H is called the receptor.

5. Nov/2023 /Paper_ 0610/21/No.26

The diagrams show three types of neurones.



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B M → L → N

C M → N → L

D N → M → L

6. Nov/2023 /Paper_ 0610/21/No.27

Which statement about rods and cones in the eye is correct?

A Both rods and cones detect different colours of light.

B Only cones are present in the blind spot.

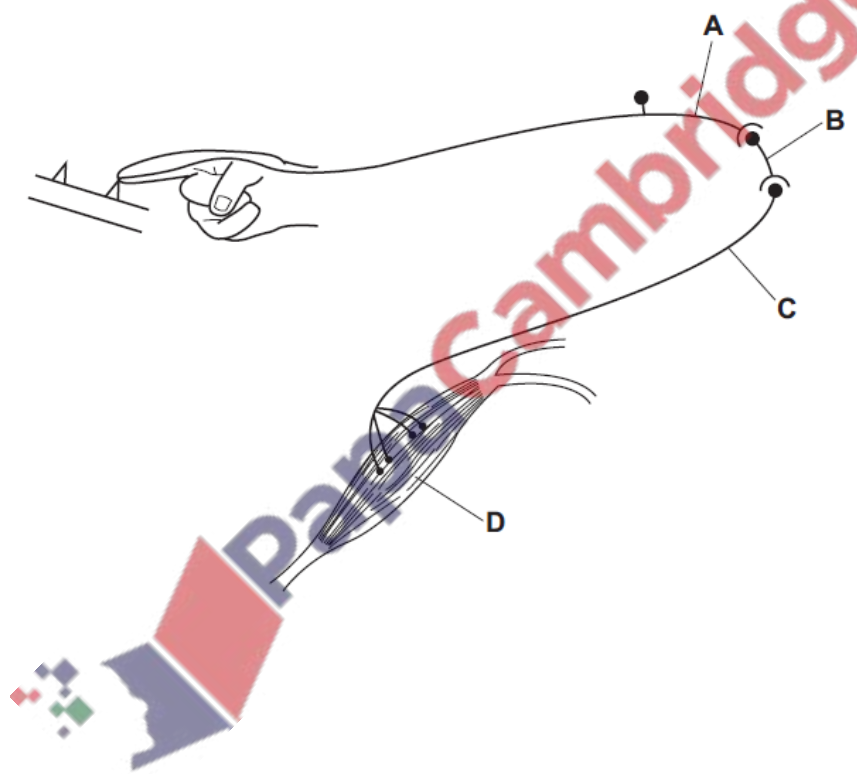
C Rods are more sensitive than cones in low light intensity.

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

7. Nov/2023 /Paper_ 0610/22/No.26

The diagram shows a reflex arc in a human nervous system. The person's finger has just made contact with a sharp object.

Which part is the motor neurone?



8. Nov/2023 /Paper_ 0610/22/No.27

Which hormones can increase blood glucose concentration?

A adrenaline and insulin

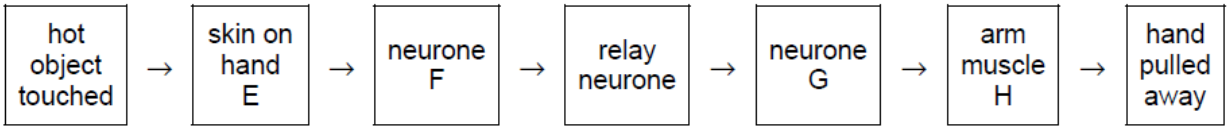
B adrenaline and glucagon

C adrenaline only

D glucagon only

9. Nov/2023 /Paper_ 0610/23/No.26

The diagram shows a reflex action when a person touches a hot object and pulls their hand away.



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C G is called the motor neurone.

D H is called the receptor.

10. Nov/2023 /Paper_ 0610/23/No.27

A light source is placed on one side of a growing plant.

What is the correct explanation of the role of auxin in shoot growth?

A Auxin is equally distributed in response to light and stimulates cell elongation.

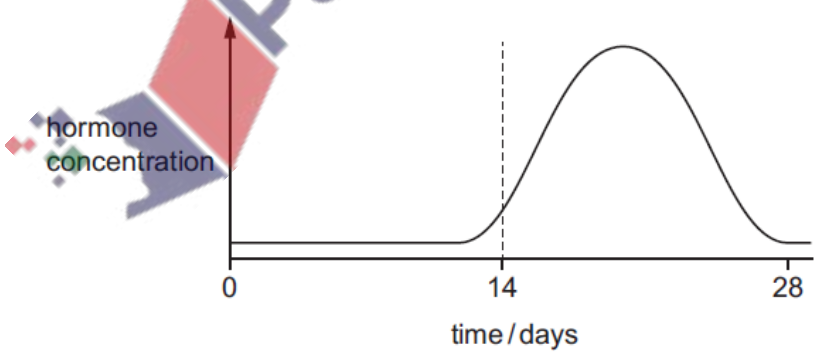
B Auxin is equally distributed in response to light and inhibits cell elongation.

C Auxin is unequally distributed in response to light and stimulates cell elongation.

D Auxin is unequally distributed in response to light and inhibits cell elongation.

11. Nov/2023 /Paper_ 0610/23/No.32

The graph shows the changes in the concentration of a hormone that is involved in controlling the menstrual cycle.



What is the hormone?

A FSH

B LH

C oestrogen

D progesterone

(a) (i) Frogs are classified as amphibians.

State **two** features of amphibians that distinguish them from all other vertebrates.

1 .....

2 .....

[2]

(ii) Fig. 3.1 is a photograph of a cross-section of a frog's eye.

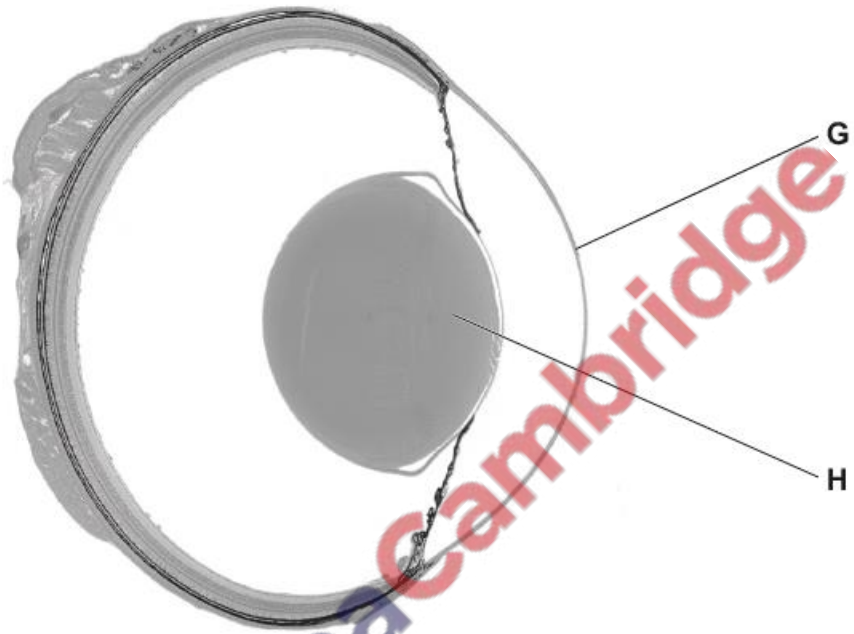


Fig. 3.1

Identify the structures labelled **G** and **H** in Fig. 3.1.

G .....

H .....

[2]

(b) Fig. 3.2 is a diagram of a rod cell and a cone cell from a human eye.

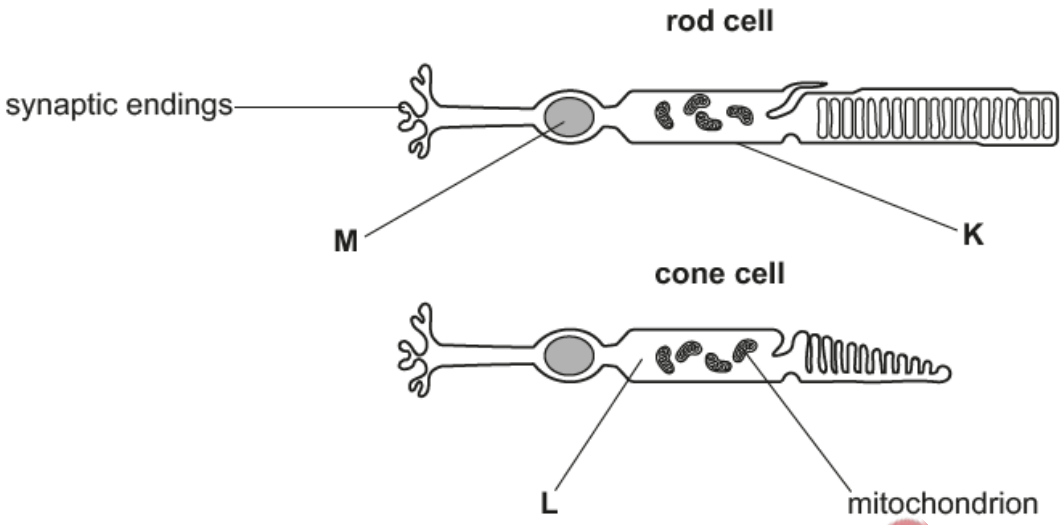


Fig. 3.2

(i) Identify cell structures **K**, **L** and **M** in Fig. 3.2.

K .....

L .....

M .....

[3]

(ii) State the names of the **two** parts of the mammalian central nervous system.

1 .....

2 .....

[1]

(c) Fig. 3.3 is a graph showing the distribution of rod cells and cone cells across the retina in a human eye.

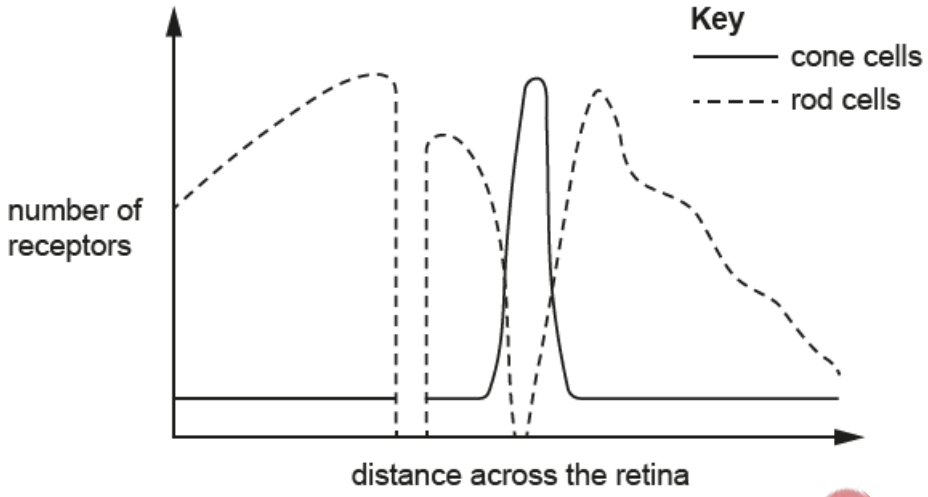


Fig. 3.3

(i) **On Fig. 3.3** draw:

- the letter **P** to show the location of the fovea
- the letter **Q** to show the location of the blind spot.

[2]

(ii) Describe and explain the distribution of rod cells and cone cells shown in Fig. 3.3.

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..... [5]

(iii) Some mammals are nocturnal which means they are active at night and sleep during the day.

Suggest how the number and distribution of rod cells and cone cells across the retina of a nocturnal mammal would differ from a human retina.

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..... [2]

[Total: 17]

Fig. 3.1 is a diagram of the junction between two neurones in a healthy person.

Fig. 3.2 is a diagram of the junction between the same two neurones in a person who has Parkinson's disease. This disease affects the nervous system.

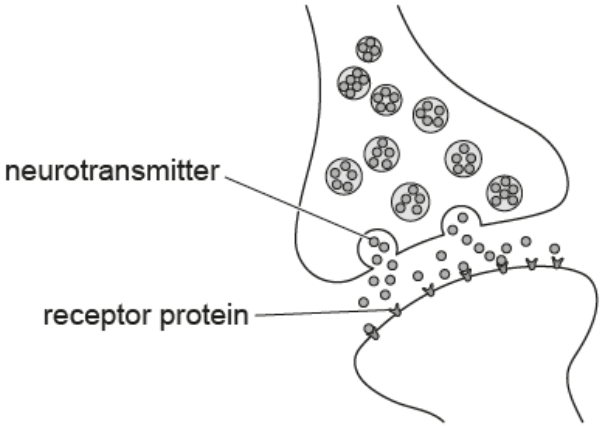

Fig. 3.1

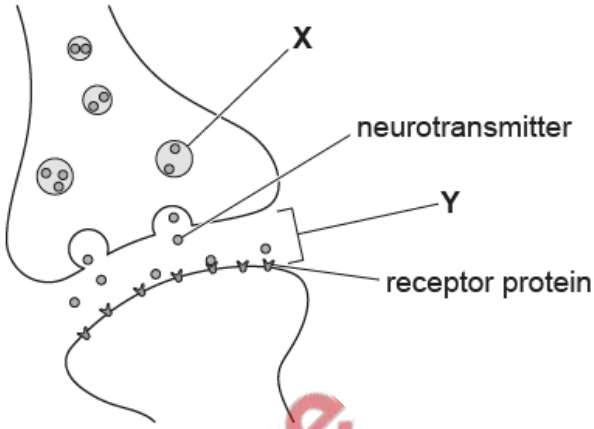

Fig. 3.2

(a) Identify the parts labelled **X** and **Y** in Fig. 3.2.

X .....

Y .....

[2]

(b) Parkinson's disease affects neurones in the brain that are responsible for movement.

Using the information in Fig. 3.1 and Fig. 3.2, suggest **and** explain the effect of Parkinson's disease on a person's movement.

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..... [5]

(c) Describe **two** ways nervous control differs from hormonal control.

1 .....

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2 .....

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[2]

(d) **(i)** The shape of the receptor proteins shown in Fig. 3.1 and Fig. 3.2 is important for their function.

Explain how the shape of the receptor proteins is determined.

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..... [2]

(ii) Cell membranes also contain protein carriers. Describe the role of protein carriers.

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..... [2]

[Total: 13]

(a) Complete the sentences about the control of body temperature.

The human body maintains a constant internal temperature. This is an example of ..... . When the temperature moves away from the set point, the mechanism of ..... returns the temperature to the set point.

[2]

(b) Fig. 4.1 is a diagram of a section of human skin.

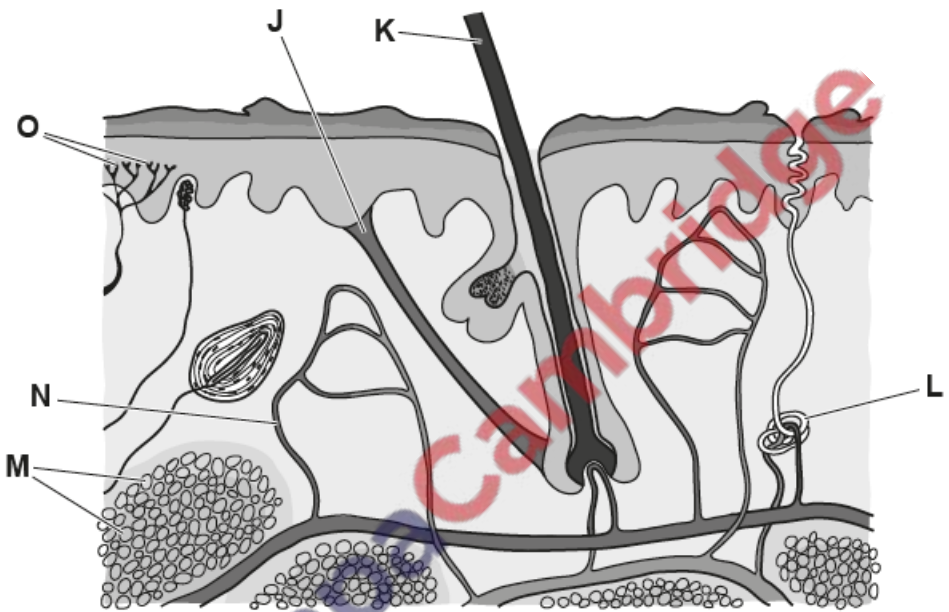

Fig. 4.1

(i) State the names of the structures labelled **L**, **O** and **J** in Fig. 4.1.

L .....

O .....

J .....

[3]

(ii) Describe how humans maintain a constant body temperature when the external temperature decreases.

Use the structures labelled in Fig. 4.1 in your answer.

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..... [6]

(c) Blood glucose concentration is maintained at a constant set point using the hormones glucagon and insulin.

(i) State the organ that secretes glucagon.

..... [1]

(ii) Describe the effect of glucagon on the body.

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..... [1]

[Total: 13]