

1. Nov/2020/Paper_11/No.20

Which organs in humans are involved in maintaining body temperature?

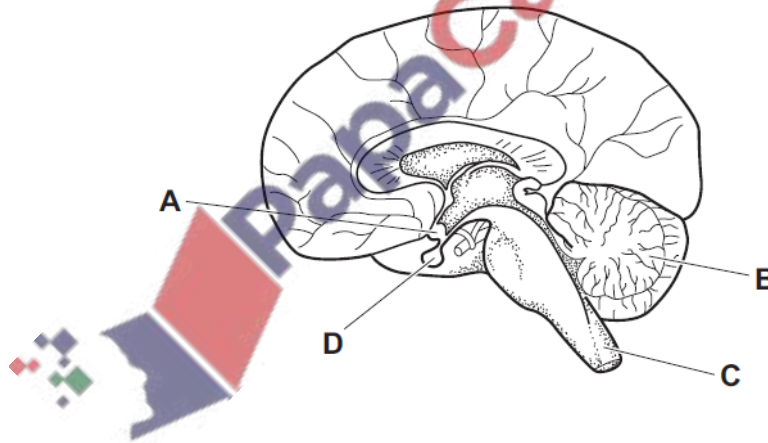
	brain	skin
A	✓	✓
B	✓	x
C	x	✓
D	x	x

key
✓ = yes
x = no

2. Nov/2020/Paper_11/No.21

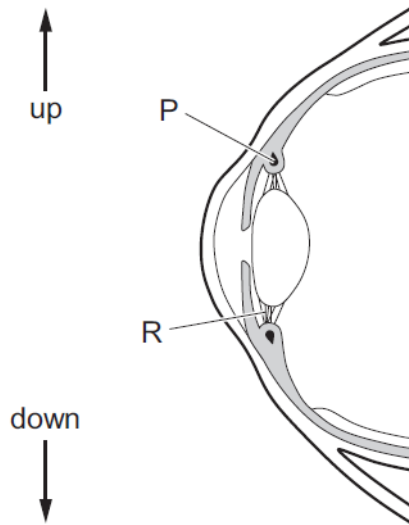
The diagram shows a section through the brain.

Which part is the hypothalamus?



3. Nov/2020/Paper_11/No.22

The diagram shows a section through the eye.



When the person looks down and focuses on their mobile phone, what is the state of the structures P and R?

	P	R
A	contracted	loose
B	contracted	tight
C	relaxed	loose
D	relaxed	tight

4. Nov/2020/Paper_11/No.23

What is a sign of diabetes mellitus?

- A glucose in the blood
- B glucose in the urine
- C insulin in the blood
- D insulin in the urine

5. Nov/2020/Paper_12/No.20

Which part of the skin has a major role in insulating the human body?

- A blood vessels
- B fatty tissue
- C hair follicles
- D sweat glands

6. Nov/2020/Paper_12/No.21

What describes a reflex action?

- A It is a rapid response to a stimulus, involving the spinal cord.
- B It is a rapid response detected by motor neurones.
- C It is a slow response to a stimulus, involving the spinal cord.
- D It is a slow response detected by motor neurones.

7. Nov/2020/Paper_12/No.22

A person looks at some hills far away.

Which row shows the state of the lenses, ciliary muscles and suspensory ligaments in her eyes?

	thick lenses	contracted ciliary muscles	suspensory ligaments under tension
A	✓	✓	✓
B	✓	x	x
C	x	✓	x
D	x	x	✓

key

✓ = yes

x = no

8. Nov/2020/Paper_12/No.23

What is a sign of diabetes mellitus?

- A glucose in the blood
- B glucose in the urine
- C insulin in the blood
- D insulin in the urine

In 1931 a scientist was pouring the powdered form of a chemical called PTC into a bottle. A small amount of the powder accidentally blew into the air. A short time later another scientist working in the same room said that she had a bitter taste in her mouth from the powder in the air.

- (a) Describe, with reference to **named** components of the nervous system, the nervous pathway that led to the scientist detecting that the powder tasted bitter.

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..... [4]

- (b) The scientist pouring the powder did **not** detect any bitter taste.

It was later found that inheritance of two forms of the same gene determine if a person is able to detect a bitter taste from PTC or not.

- (i) State the term used for different forms of the same gene.

..... [1]

- (ii) Several years afterwards, it was found that environmental factors cause people to detect a range of different strengths of bitter taste from PTC.

State the type of variation now known to be shown by this characteristic.

..... [1]

(c) Chemicals similar to PTC with a bitter taste are produced by some plants to prevent them from being eaten.

Animals that eat **only** plants have fewer genes that enable them to detect chemicals that taste bitter than animals that eat **both** plants and animals.

(i) State the trophic level of plants in a food web.

..... [1]

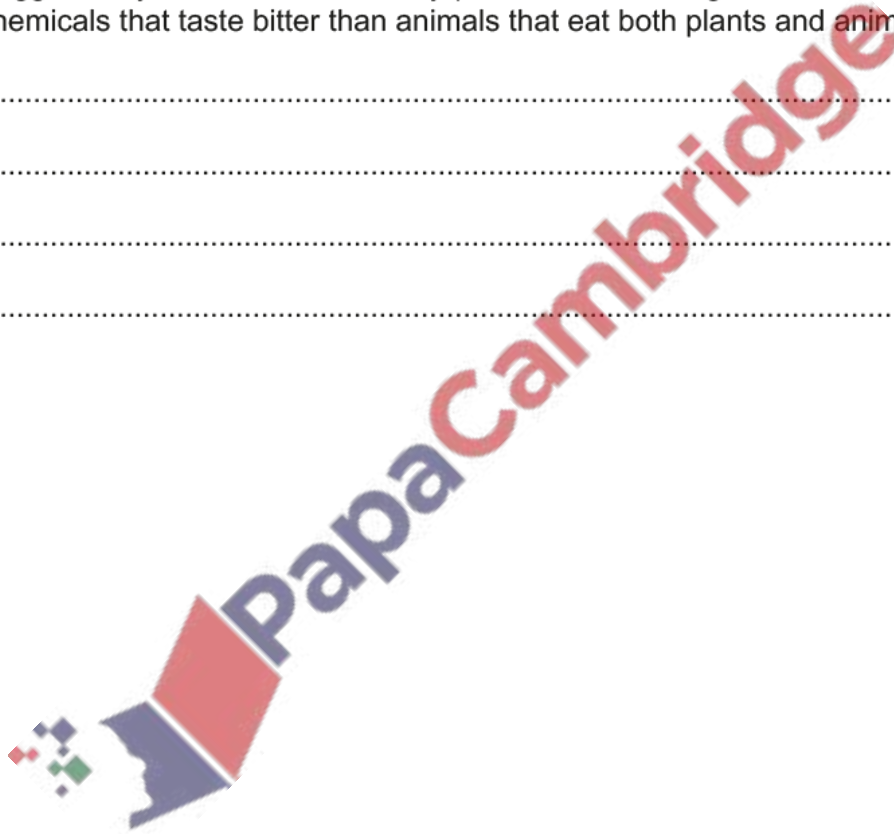
(ii) State the term used for animals that eat **only** plants.

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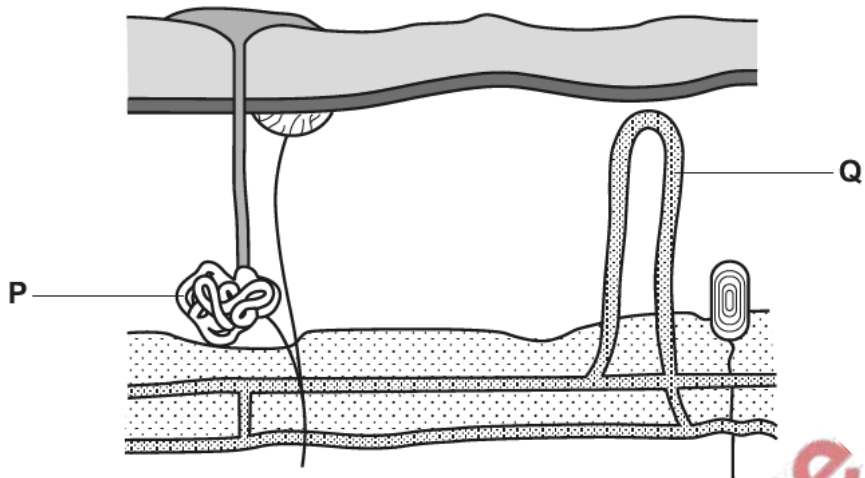
(iii) Suggest why animals that eat only plants have fewer genes that enable them to detect chemicals that taste bitter than animals that eat both plants and animals.

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..... [2]

[Total: 10]



The diagram shows a vertical section through human skin in a hot environment.



(a) Name **and** outline the role of **P** and **Q** in the control of body temperature when a person is in a hot environment.

P

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Q

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[7]

(b) Explain how the process of temperature control in humans is an example of:

homeostasis

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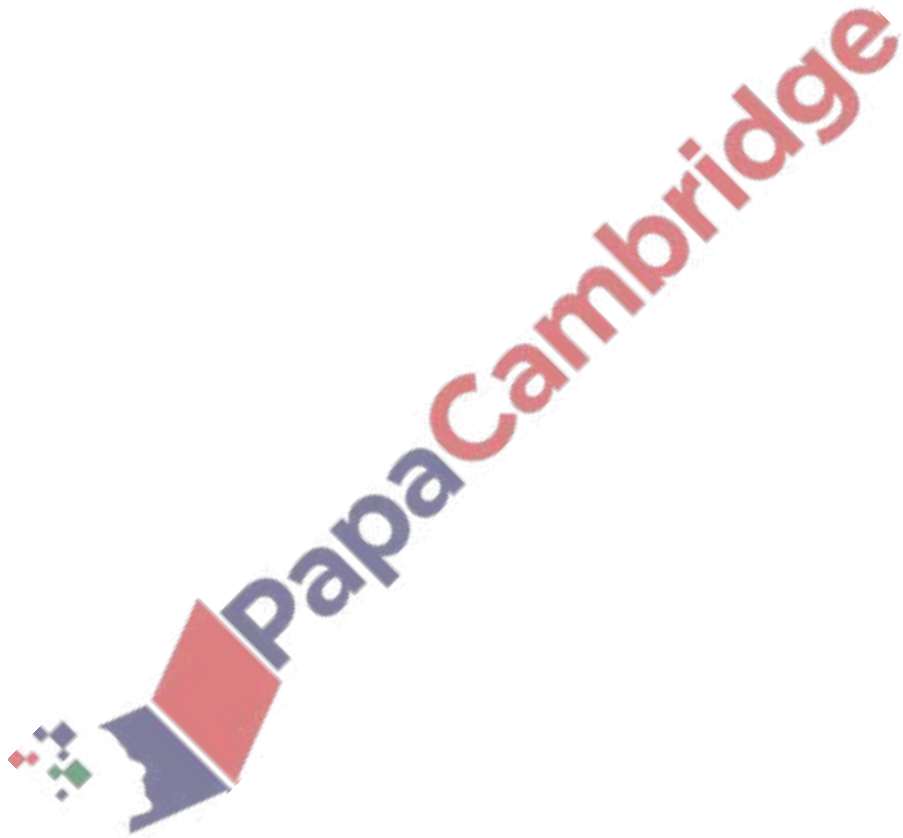
negative feedback.

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[3]

[Total: 10]



11. Nov/2020/Paper_22/No.8

Describe the principal roles, in terms of coordinating and regulating bodily functions, of:

(a) the cerebrum

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..... [5]

(b) the cerebellum

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..... [2]

(c) the hypothalamus.

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..... [3]

[Total: 10]

12. Jun/2020/Paper_11/No.20

Which of these statements describes control by **negative** feedback?

- A An injury to body tissue activates platelets in the blood and these activated platelets release chemicals which activate more platelets.
- B During the menstrual cycle, luteinising hormone (LH) stimulates the release of oestrogen which in turn stimulates the release of more LH.
- C A higher concentration of carbon dioxide in the atmosphere increases temperature, which increases photosynthesis producing more carbon dioxide.
- D When blood pressure is high, nerve impulses from the brain cause the blood vessels to dilate and blood pressure is reduced.

13. Jun/2020/Paper_11/No.21

Which statements describe the pupil reflex in bright light?

- 1 ciliary muscles contract
- 2 ciliary muscles relax
- 3 circular iris muscles contract
- 4 circular iris muscles relax
- 5 lens becomes rounder
- 6 lens becomes thinner
- 7 pupil constricts
- 8 pupil dilates
- 9 radial iris muscles contract
- 10 radial iris muscles relax

- A 1, 6 and 9 B 2, 5 and 10 C 3, 7 and 10 D 4, 8 and 9

14. Jun/2020/Paper_11/No.22

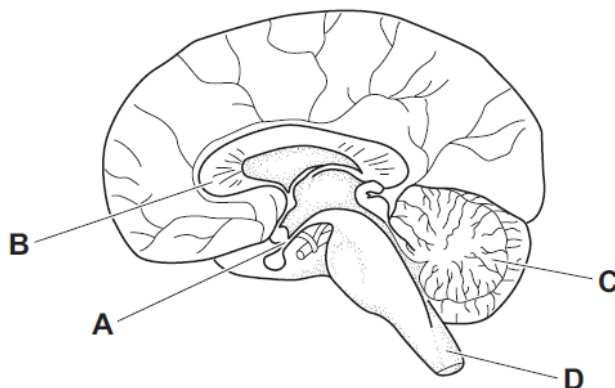
Which chemical produced by the body alters the activity of a target organ and is destroyed by the liver?

- A bile
- B enzyme
- C hormone
- D saliva

15. Jun/2020/Paper_11/No.23

The diagram shows a section through the human brain.

Which labelled part contains the temperature regulation centre?



16. Jun/2020/Paper_11/No.25

What are the effects of heroin?

	can cause addiction	delays sleep and increases alertness	withdrawal symptoms are severe
A	✓	✓	✓
B	✓	✓	✗
C	✓	✗	✓
D	✗	✓	✓

key
 ✓ = yes
 ✗ = no

17. Jun/2020/Paper_11/No.20

Which of these statements describes control by **negative** feedback?

- A** An injury to body tissue activates platelets in the blood and these activated platelets release chemicals which activate more platelets.
- B** During the menstrual cycle, luteinising hormone (LH) stimulates the release of oestrogen which in turn stimulates the release of more LH.
- C** A higher concentration of carbon dioxide in the atmosphere increases temperature, which increases photosynthesis producing more carbon dioxide.
- D** When blood pressure is high, nerve impulses from the brain cause the blood vessels to dilate and blood pressure is reduced.

18. Jun/2020/Paper_12/No.21

Which structures does light pass through when it is focused on the retina?

	cornea	lens	sclera
A	✓	✓	✓
B	✓	✓	x
C	✓	x	✓
D	x	✓	✓

key

✓ = yes

x = no

19. Jun/2020/Paper_12/No.22

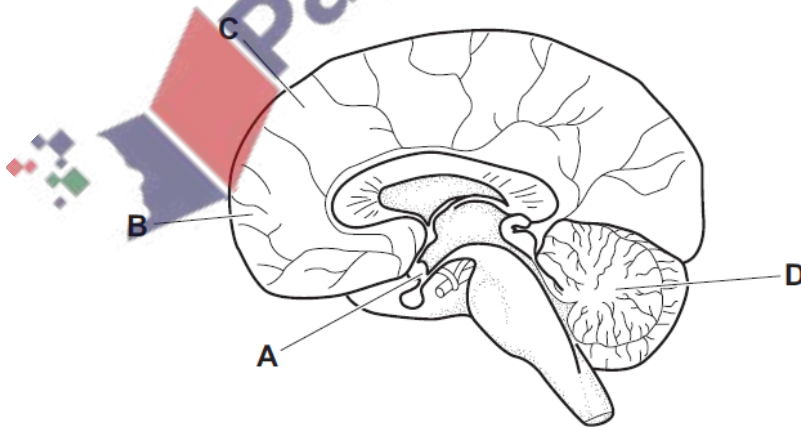
Where are receptors found?

- A along the length of all neurones
- B at both ends of relay neurones
- C at one end of motor neurones
- D at one end of sensory neurones

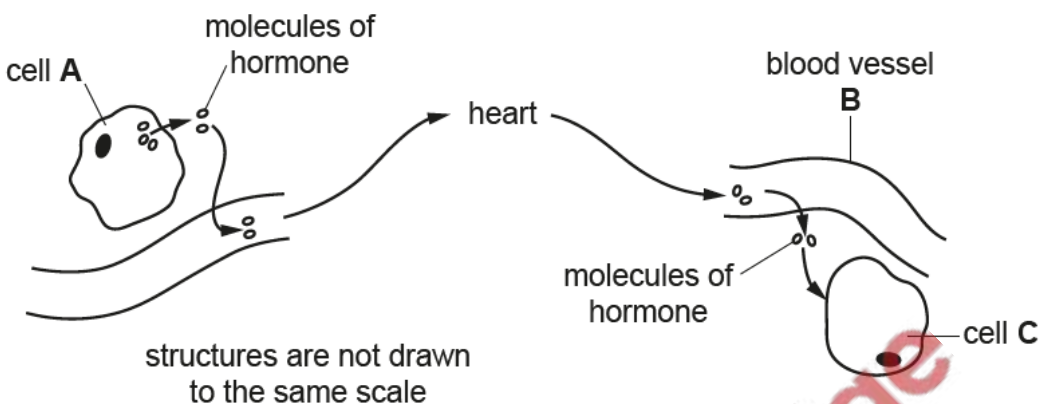
20. Jun/2020/Paper_12/No.23

The diagram shows a section through the human brain.

Which part senses and reacts to a change in blood temperature?



The diagram shows the pathway taken by a hormone from cell A where it is produced to cell C that it affects.



(a) (i) Identify the type of blood vessel B. [1]

(ii) Explain the ways in which this type of blood vessel is adapted for the transport of hormone molecules.

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(iii) State how molecules of the hormone are transported through blood vessel B. [4]

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..... [2]

(b) For a **named** hormone, identify the gland containing cell **A**, an organ containing cell **C** and a function or effect of the hormone you have named.

- named hormone
- the gland containing cell **A**
- an organ containing cell **C**
- a function or effect of the named hormone

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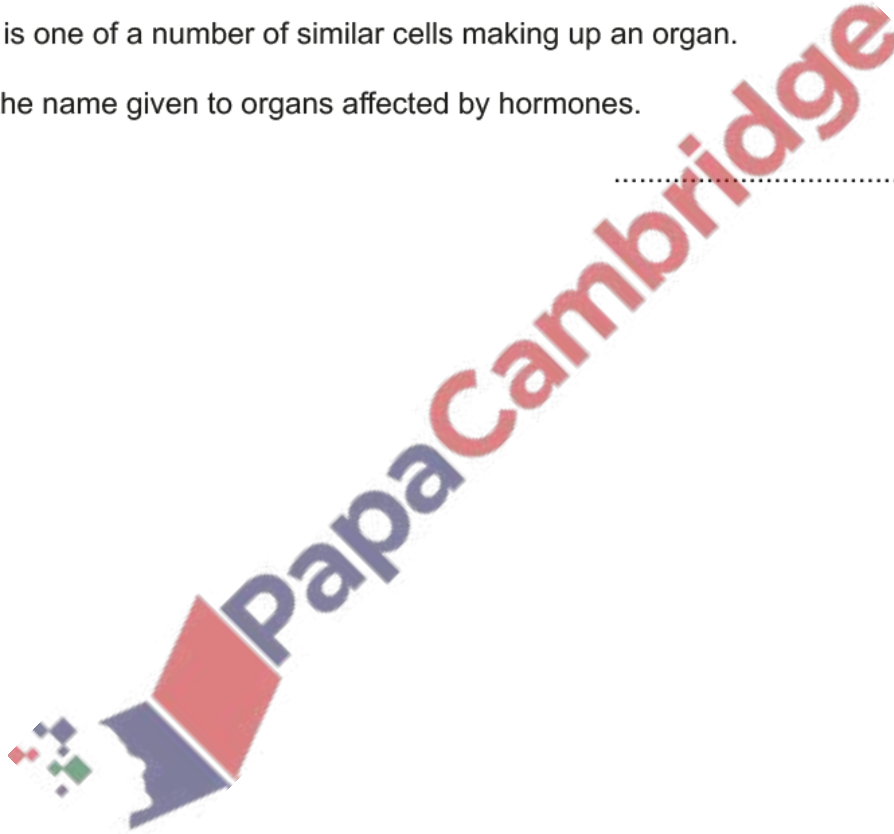
[4]

(c) Cell **C** is one of a number of similar cells making up an organ.

State the name given to organs affected by hormones.

..... [1]

[Total: 12]



(a) Describe the similarities and differences in the **functions** of a motor and a sensory neurone.

similarities

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differences

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[5]

(b) Describe the functions of the following parts of the brain.

(i) the cerebrum

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[3]

(ii) the hypothalamus

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[2]

[Total: 10]

