

(Adaptations (structural, behavioural, functional))

Q1.(2020)

The eyes of some birds have specialised cells to detect ultraviolet (UV) light.

Some fruits reflect UV light.

Explain why it is an advantage for birds to be able to detect UV light.

[2 marks]

Q2.a)(2022)

The echidna is a mammal that lives in Australia.

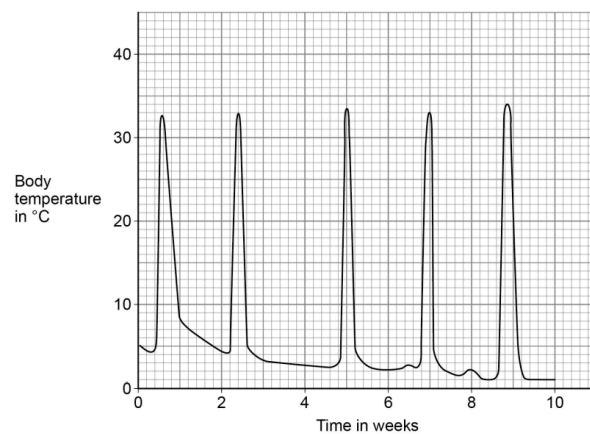
Figure 8 shows an echidna.

Figure 8



Figure 9 shows how the body temperature of the echidna varies during the cold winter months.

Figure 9



Give the lowest and highest body temperatures for the echidna shown in **Figure 9**.

[1 mark]

Lowest temperature = _____ °C

Highest temperature = _____ °C

Q2.b)(2022)

In the cold winter months, the echidna hibernates.

Figure 9 shows that the echidna woke up from hibernation several times.

The echidna's body temperature increased to over 30 °C each time the echidna woke up.

How many times did the echidna wake up?

Use information from **Figure 9**.

[1 mark]

Q2.c)(2022)

Each time the echidna wakes up, it hunts for food.

Suggest why the echidna needs to eat food several times during hibernation.

[1 mark]

Q2.d)(2022)

During hibernation:

- the echidna sleeps
- the echidna's body temperature decreases to below 5 °C
- the echidna uses food stored in its body cells to provide energy.

What process releases energy from stored food?

[1 mark]

Tick (✓) **one** box.

Diffusion

☐

Excretion

☐

Respiration

☐

Q2.e)(2022)

Most mammals use a lot of energy to evaporate sweat.

The echidna does **not** sweat.

Suggest **one** use of energy in the echidna's body.

[1 mark]

Q3.(2023)

One **abiotic** factor that affects the number of buttercup plants on the lawn is soil pH.

Give **one** other **abiotic** factor that could affect the number of buttercup plants on the lawn.

Do **not** refer to soil pH in your answer.

[1 mark]

Q4.a)(2023)

Figure 4 shows the appearance of the snowshoe hare in the summer and in the winter.

Figure 4

Snowshoe hare in summer



Snowshoe hare in winter



The snowshoe hare has a different fur colour in the summer than in the winter.

Explain how the different fur colour increases the chance of survival of the snowshoe hare.

[3 marks]

Q4.b)(2023)

Figure 5 shows how the number of snowshoe hares and the number of lynx varied in one area between 1900 and 1935.

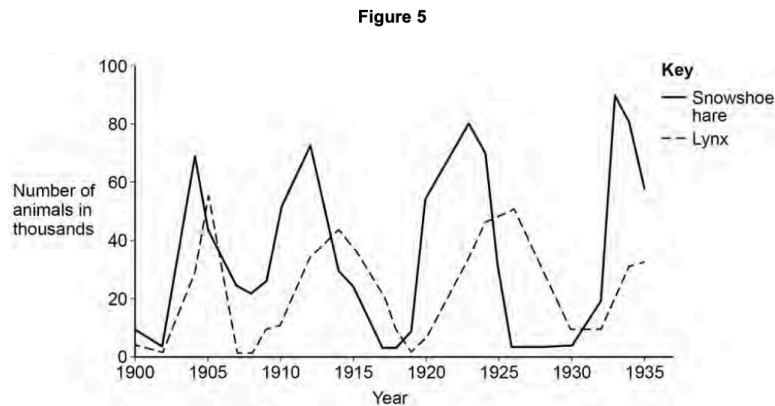


Figure 5 shows that the number of snowshoe hares and the number of lynx increase and decrease several times.

Suggest **two** reasons why the number of **snowshoe hares** increases.

[2 marks]

- 1 _____
- 2 _____

Q4.c)(2023)

The number of snowshoe hares increased and decreased four times between 1900 and 1935.

What effect does an **increase** in the number of snowshoe hares have on the number of lynx?

[1 mark]

Q4.d)(2023)

Suggest **one** reason why the number of lynx decreased from 1915 to 1919.

Use information from **Figure 5**.

[1 mark]

Q4.e)(2023)

When the snowshoe hare eats grass, about 90% of the biomass of the grass is lost.

Give **two** ways the biomass is lost.

[2 marks]

1 _____

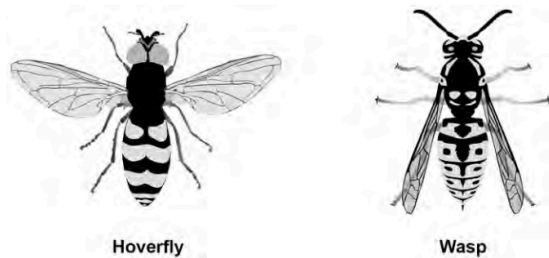
2 _____

Q5.(2024)

The hoverfly and the wasp are insects with bright yellow and black markings.

Figure 12 shows a hoverfly and a wasp.

Figure 12



The wasp has a sting to defend itself against predators.

The hoverfly does **not** have a sting.

Hoverflies and wasps live in the same habitat.

Explain how having yellow and black markings helps the **hoverfly** survive.

[3 marks]
