

Adaptive features: practice questions

6 questions • 14 marks • mark scheme at the back

For Cambridge IGCSE Biology 0610 (and 0970, which has the same content). **Supplement** is Extended content, only examined on Papers 2 and 4.

Name

Total / 14

1 Which is the best definition of an adaptive feature? [1 mark]

- A. ☐ A feature an organism learns during its life
- B. ☐ An inherited feature that helps an organism to survive and reproduce in its environment
- C. ☐ A feature that only appears in a mutated organism
- D. ☐ Any difference between two species

2 A polar bear has white fur and a thick layer of fat under its skin. Describe how each feature helps the polar bear to survive in the Arctic. [3 marks]

3 A cactus lives in a hot desert. Its leaves are reduced to spines and its stem is thick. Suggest how these features help the cactus to survive. [2 marks]

4 **Supplement** [4 marks]

Marram grass is a xerophyte. Its leaves roll up and have hairs that trap air, and its stomata are in pits. Explain how these features help marram grass to survive in dry, windy sand dunes.

5

Supplement

[3 marks]

A water lily is a hydrophyte. It has floating leaves with stomata only on the upper surface and large air spaces in the leaves. Explain how each feature helps the water lily to survive in water.

6

Supplement

[1 mark]

Which feature is found in a xerophyte but not in a hydrophyte?

- A . ☐ Large air spaces in the leaf
- B . ☐ Stomata on the upper surface of a floating leaf
- C . ☐ Thick waxy cuticle
- D . ☐ Little or no xylem

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

B B (1)

2. [3]

- white fur gives camouflage (1)
- against the snow, so prey cannot see it / the bear can hunt (1)
- fat is insulation / reduces heat loss (1) ignore keeps it warm on its own

3. [2]

- spines have a small surface area, so less water is lost (by transpiration) (1)
- thick stem stores water (1)
- spines protect the cactus from being eaten by animals (1)
- Max 2

4. [4] **Supplement**

- rolled leaves reduce the exposed surface area (1)
- trap a layer of humid air / water vapour (1)
- which reduces the concentration gradient of water vapour out of the leaf (1)
- stomata in pits reduce water vapour loss / transpiration (1)
- hairs reduce air movement over the stomata (1)
- Max 4

5. [3] **Supplement**

- stomata on the upper surface because the lower surface is in contact with water (1)
- so gas exchange can occur with the air (1)
- air spaces make the leaf float / provide buoyancy, so it receives more light (1)
- air spaces store oxygen or carbon dioxide for gas exchange (1)
- Max 3

6. [1] **Supplement**

C C (1)