

2.6 Adaptations

Name: _____ Class: _____ Date: _____

Total: 12 marks

Objective

Build the skills to answer exam questions on **adaptations**.

You must be able to:

- distinguish **structural** 结构, **physiological** 生理, and **behavioral** 行为 adaptations
- explain how adaptations arise by **natural selection**
- link an adaptation to survival in an environment

1 Worked examples

Study these first. Each one shows the method for a question type used later —follow the steps and you can do the Practice and Exam-style questions yourself.

■ Types of adaptation

- **Structural** —a physical feature (thick fur, sharp claws).
- **Physiological** —an internal process (venom, water conservation).
- **Behavioral** —an action (migration, hibernation).

■ Adaptations arise by selection

Adaptations are heritable traits that improve survival/reproduction. They spread through a population by **natural selection** over generations, matching the species to its environment.

■ A worked classification

A camel's hump (fat store) is **structural**; its ability to go without water is **physiological**; a desert lizard being active at night is **behavioral**.

■ Adaptation and environment

Each adaptation suits a specific challenge —cold, drought, predators —so an organism is well matched to where it lives.

2 Practice

Now apply the methods above.

2.1 Name the three types of adaptation. [3]

2.2 Classify thick fur on an arctic fox. [1]

2.3 How do adaptations spread through a population? [1]

3 Exam-style questions

3.1 Hibernating through winter is a [1]

- **A** structural adaptation
- **B** physiological adaptation
- **C** behavioral adaptation
- **D** learned habit only

3.2 A desert plant has a thick waxy coating and stores water in its stem.

(a) Classify each of these two features. [2]

(b) Explain how these adaptations help it survive. [2]

3.3 Explain how a beneficial adaptation becomes common in a population over time. [2]

4 Go further

You are now ready for the real exam questions on this subtopic:

- work through the **2.6 Adaptations** lesson on the **Learn** page;
- read the **Adaptations** section of the AP Environmental Science handout on the **Know** page.

Solutions

2.1 Structural, physiological, behavioral.

2.2 Structural.

2.3 By natural selection over generations.

3.1 C —a behavioral adaptation.

3.2 (a) Waxy coating = structural; storing water = physiological (or structural stem). (b) The waxy coating reduces water loss and the stored water lets the plant survive drought, so it survives in a dry desert.

3.3 Individuals with the adaptation survive and reproduce more, passing the trait to offspring; over generations it becomes common in the population.