

## 7.2 Natural Selection

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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

Total: 9 marks

**KEY WORDS** disruptive 分裂 • directional 定向 • stabilizing 稳定 • natural selection 自然选择  
• variation 变异

### Objective

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Build the skills to answer exam questions on **types of natural selection**.

**You must be able to:**

- distinguish **directional** 定向, **stabilizing** 稳定, and **disruptive** 分裂 selection
- match each to its effect on a trait distribution
- give an example of each

### 1 Worked examples

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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.

#### ■ Three patterns of selection

- **Directional** — favors one **extreme**; the average shifts that way (e.g. larger beak size in a drought).
- **Stabilizing** — favors the **middle**; extremes are selected against (e.g. average human birth weight).
- **Disruptive** — favors **both extremes** over the middle; can split a population.

#### ■ Reading a distribution graph

- Directional: the peak **moves** left or right.
- Stabilizing: the peak gets **taller and narrower** (less variation).
- Disruptive: **two peaks** appear.

#### ■ A worked identification

If small and large individuals both survive better than medium ones, that is **disruptive** selection (two favored extremes).

#### ■ Why it matters

Each pattern changes the population's trait distribution differently, shaping how a species adapts over time.

## 2 Practice

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Now apply the methods above.

**2.1** Which type of selection favors the average trait? [1]

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**2.2** Which type shifts the average toward one extreme? [1]

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**2.3** What happens to a distribution under disruptive selection? [1]

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## 3 Exam-style questions

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**3.1** Selection that favors both extremes over the middle is [1]

|   |   |
|---|---|
| A | B |
| C | D |

**A** directional

**B** stabilizing

**C** disruptive

**D** artificial

**3.2** In a drought, only birds with large beaks can crack the remaining hard seeds.

(a) Name the type of selection. [1]

(b) Describe how the beak-size distribution changes over generations. [2]

**3.3** Human birth weight clusters near an average, with very small and very large babies less likely to survive. Name and explain the type of selection. [2]