

6.12 Wind Energy

Name: _____ Class: _____ Date: _____

Total: 10 marks**KEY WORDS** wind turbines 风力涡轮机 • wind 风能

Objective

Build the skills to answer exam questions on **wind energy**.**You must be able to:**

- describe how **wind turbines** 风力涡轮机 generate electricity
- state advantages and disadvantages
- explain intermittency and siting issues

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.

■ How it works

Wind turbines use moving air to spin blades connected to a generator, producing electricity. Wind is a **renewable**, low-carbon source.

■ Advantages

- Renewable, **no** CO₂ during use, no fuel cost.
- Land between turbines can still be farmed.

■ Disadvantages

- **Intermittent** — only works when the wind blows (needs storage/backup).
- Can **harm birds and bats**; noise and visual impact.
- Best only in consistently **windy** locations (coasts, plains, ridges).

■ A worked judgement

A wind farm on a windy coast provides clean power and lets the land below stay in use, but produces nothing on calm days and may affect local birds.

2 Practice

Now apply the methods above.

2.1 What spins a wind turbine's blades? [1]**2.2** State one advantage of wind energy. [1]**2.3** State one disadvantage. [1]

3 Exam-style questions

3.1 A disadvantage of wind power is that it is [1]

A	B
C	D

A a major CO₂ source**B** intermittent (depends on wind)**C** nonrenewable**D** available everywhere equally**3.2** A region installs a large wind farm.

(a) State one benefit and one drawback. [2]

(b) Explain how the intermittency problem could be managed. [2]

3.3 Explain why wind energy is considered renewable and low-carbon. [2]