

6.6 Nuclear Power

Name: _____ Class: _____ Date: _____

Total: 10 marks

KEY WORDS nuclear power 核能 • waste 核废料 • fission 裂变 • nuclear fission 核裂变
• methane 甲烷

Objective

Build the skills to answer exam questions on **nuclear power**.

You must be able to:

- describe **nuclear fission** 核裂变 to generate electricity
- state advantages (no CO₂, high energy density)
- state disadvantages (radioactive waste, accidents)

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

Nuclear power splits uranium atoms (**fission**), releasing huge heat that boils water to spin a turbine — generating electricity, like a steam plant but with a nuclear heat source.

■ Advantages

- Produces **no** CO₂ during operation (helps climate).
- Very high energy density** — a tiny amount of fuel yields a lot of energy.
- Reliable “baseload” power.

■ Disadvantages

- Radioactive waste** stays dangerous for thousands of years and must be stored safely.
- Risk of **accidents** (Chernobyl, Fukushima) releasing radiation.
- High cost and **thermal pollution** of cooling water.
- Uranium is **nonrenewable**.

■ A worked judgement

Nuclear power is low-carbon and energy-dense, but the long-lived waste and accident risk make it controversial.

2 Practice

Now apply the methods above.

2.1 What process generates the heat in a nuclear plant? [1]

2.2 State one advantage of nuclear power. [1]

2.3 State one disadvantage. [1]

3 Exam-style questions

3.1 A climate advantage of nuclear power is that it [1]

A	B
C	D

A produces no CO₂ during operation

B burns coal

C releases methane

D needs no fuel

3.2 A country considers building nuclear plants to cut carbon emissions.

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

(b) Explain the main challenge of nuclear waste. [2]

3.3 Explain why nuclear power is low-carbon but still not fully renewable. [2]