

7.7 Acid Rain

Name: _____ Class: _____ Date: _____

Total: 11 marks**KEY WORDS** acid rain 酸雨 • scrubbers 洗涤器 • catalytic converters 催化转化器 • ozone 臭氧

Objective

Build the skills to answer exam questions on **acid rain**.

You must be able to:

- explain how **acid rain** 酸雨 forms from SO_2 and NO_x
- describe effects on water, soil, forests, and buildings
- suggest solutions

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 acid rain forms

Burning fossil fuels releases **SO_2** and **NO_x** , which react with water in the atmosphere to form **sulfuric** and **nitric acids**. These fall as **acid rain** (pH below normal ~ 5.6).

■ Effects

- **Lakes/streams** become acidic, killing fish and aquatic life.
- **Soil** loses nutrients and releases toxic aluminum.
- **Forests** are damaged (leaf/needle loss).
- **Buildings/statues** (limestone, marble) are eroded.

■ It travels

Acid rain often falls **far from** the source (carried by wind), so pollution in one country can harm another — a transboundary problem.

■ Solutions

Reduce SO_2/NO_x using **scrubbers**, low-sulfur fuels, and catalytic converters; adding **lime** can temporarily neutralize acidified lakes.

2 Practice

Now apply the methods above.

2.1 Which two pollutants cause acid rain? [2]

2.2 State one effect of acid rain on aquatic life. [1]

2.3 State one way to reduce acid rain. [1]

3 Exam-style questions

3.1 Acid rain forms when SO_2 and NO_x react in the atmosphere with [1]

A	B
C	D

A oxygen only

B water to form acids

C nitrogen gas

D ozone

3.2 A coal-burning region downwind has acidified lakes.

(a) Explain how the coal plants cause the acidified lakes. [3]

(b) State one solution to reduce the emissions. [1]

3.3 Explain why acid rain is considered a transboundary (cross-border) problem. [2]
