AP ENVIRONMENTAL SCIENCE • EXERCISE SHEET

6.13 Energy Conservation

Name: _____ Class: _____ Date: _____ **Total: 10 marks**

Objective

Build the skills to answer exam questions on **energy conservation**.

You must be able to:

- distinguish **conservation** 节约 from **efficiency** 效率
- give examples of each
- explain why conservation reduces impacts and cost

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.

Conservation vs efficiency

- **Energy conservation** —**using less** energy (turning off lights, driving less).
- **Energy efficiency** —getting the **same service using less** energy (LED bulbs, insulation, efficient appliances).

Examples of efficiency

LED lights, better insulation, hybrid/electric vehicles, and Energy Star appliances all deliver the same benefit with less energy.

Why it matters

Conservation and efficiency **reduce demand**, cutting fossil-fuel use, CO_2 emissions, and cost —often the **cheapest** way to reduce environmental impact.

A worked example

Replacing incandescent bulbs with LEDs is **efficiency** (same light, less energy); switching them off when not needed is **conservation** (using less).

2 Practice

Now apply the methods above.

2.1 What is energy conservation? [1]

2.2 Give one example of energy efficiency. [1]

2.3 Why does reducing energy demand help the environment? [1]

3 Exam-style questions

3.1 Installing better home insulation is an example of energy [1]

- **A** conservation (using less service)
- **B** efficiency (same service, less energy)
- **C** production
- **D** extraction

3.2 A household wants to cut its energy use.

(a) Give one conservation action and one efficiency measure. [2]

(b) Explain how these reduce environmental impact. [2]

3.3 Explain why energy efficiency is often described as the cheapest way to cut emissions. [2]

4 Go further

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

- work through the **6.13 Energy Conservation** lesson on the **Learn** page;
- read the **Energy Conservation** section of the AP Environmental Science handout on the **Know** page.

Solutions

2.1 Using less energy.

2.2 Any one: LED bulbs, insulation, efficient appliances, hybrid cars.

2.3 It reduces fossil-fuel use and the CO_2 and pollution that go with it.

3.1 B —efficiency (same service, less energy).

3.2 (a) Conservation: e.g. turn off lights / drive less; efficiency: e.g. LED bulbs / insulation. (b) Using less energy lowers fossil-fuel demand, cutting CO_2 emissions and pollution.

3.3 Saving energy avoids the cost of generating it, and efficiency measures often pay for themselves through lower bills, so they cut emissions at negative or low net cost.