

# Efficiency

## Question Paper

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Physics
Exam Board	AQA
Topic	6.1 Energy
Sub-Topic	Efficiency
Difficulty Level	Silver Level
Booklet	Question Paper

**Time Allowed:** 10 minutes

**Score:** /10

**Percentage:** /100

**Grade Boundaries:**

**Q1.** A student finds some information about energy-saving light bulbs.

- (a) A 30W light bulb uses 600J of electrical energy in a certain period of time. In that time, it produces 450 J of light energy. The rest of the energy is wasted.

- (i) Calculate the energy wasted by the light bulb in this period of time.

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Wasted energy = ..... J

(1)

- (ii) What happens to the energy wasted by the light bulb?

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(1)

- (iii) Calculate the efficiency of this light bulb.

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Efficiency = .....

(2)

- (iv) Calculate the period of time, in seconds, during which the 600 J is provided to the 30 W light bulb.

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Time = ..... s

(2)

- (b) A company that makes light bulbs provides information about some of their products.

The table shows some of this information.

	Power in watts	Lifetime in hours	Cost of bulb in £
Filament bulb	60	1250	2.00
LED bulb	12	50 000	16.00

- (i) Suggest why it is important to confirm this information independently.

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(1)

- (ii) A homeowner is thinking about replacing his filament bulbs with LED bulbs.

A 12 W LED bulb gives the same light output as a 60 W filament bulb.

Suggest reasons why the homeowner is likely to choose LED bulbs.

Use the information given in the table.

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(2)

- (iii) State **one** factor, other than efficiency, that is important when considering the choice of a bulb for lighting in the home.

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(1)

(Total 10 marks)