

# Efficiency

## Mark Scheme

|                         |                                     |
|-------------------------|-------------------------------------|
| <b>Level</b>            | GCSE (9-1)                          |
| <b>Subject</b>          | Combined Science: Trilogy - Physics |
| <b>Exam Board</b>       | AQA                                 |
| <b>Topic</b>            | 6.1 Energy                          |
| <b>Sub-Topic</b>        | Efficiency                          |
| <b>Difficulty Level</b> | Silver Level                        |
| <b>Booklet</b>          | Mark Scheme                         |

**Time Allowed:** 10 minutes

**Score:** /10

**Percentage:** /100

**Grade Boundaries:**

- M1.(a)** (i) 150 1
- (ii) transferred to the surroundings by heating  
*reference to sound negates mark* 1
- (iii) 0.75  
*450 / 600 gains 1 mark*  
*accept 75% for 2 marks*  
*maximum of 1 mark awarded if a unit is given* 2
- (iv) 20 (s)  
*correct answer with or without working gains 2 marks*  
*correct substitution of 600 / 30 gains 1 mark* 2
- (b) (i) to avoid bias 1
- (ii) use less power and last longer 1
- 1 LED costs £16, 40 filament bulbs cost £80  
**or**  
filament costs (5 times) more in energy consumption 1
- (iii) any **one** from:

- availability of bulbs
- colour output
- temperature of bulb surface

1

[10]