1. Since 2009, filament lamps in the home have often been replaced by other lamps, called LED lamps. One LED lamp has an efficiency of 0.4.

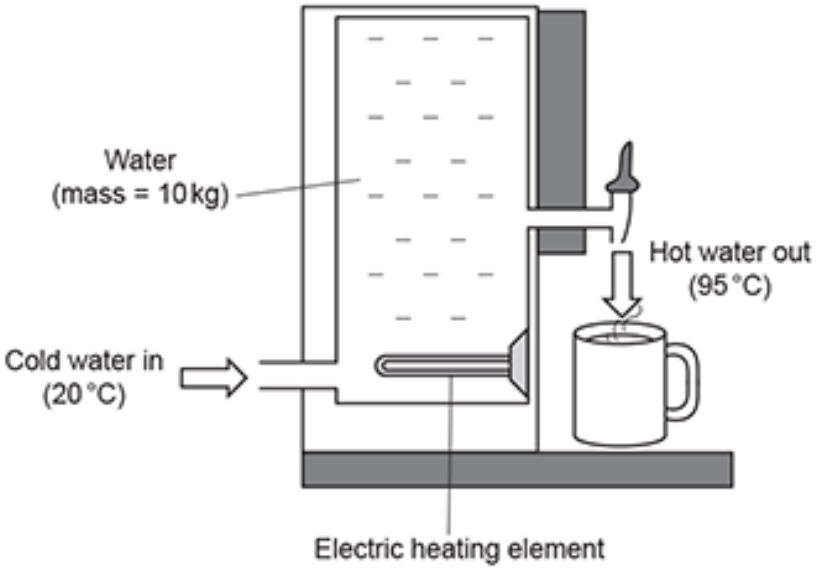
In one second, the input energy transferred by the lamp is 10 J.

Calculate the energy **wasted** by the lamp in one second.

Use the equation: $\text{efficiency} = \frac{\text{useful output energy transfer}}{\text{input energy transfer}}$

Energy wasted = ...J **[3]**

2. An electric water heater is used to make hot water for drinks.



i. The power of the water heater is 1840 W.
The p.d. of the mains supply is 230 V.

Calculate the current in the heating element.

Use the equation: power = potential difference × current

Current = ... A **[3]**

ii. An engineer says, 'You should use a water heater with a higher current.'

Suggest **two** reasons why this is a good idea.

1 _____

_____

2 _____

_____

[2]

END OF QUESTION PAPER