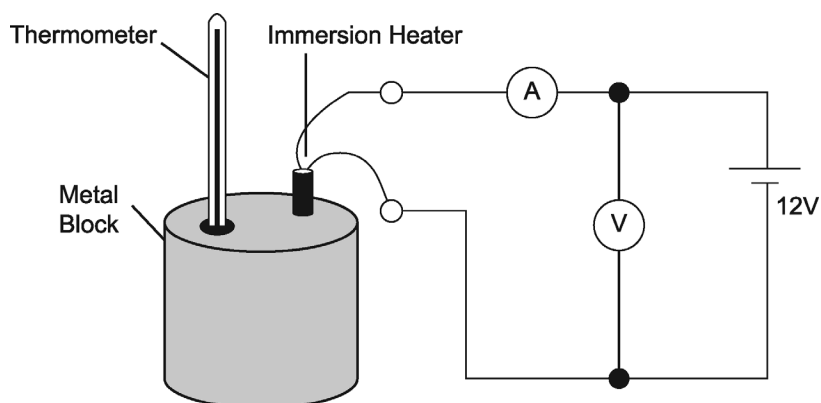


Gateway Science Physics A
J249/01 Paper 1 Foundation Tier

Question Set 23

A student does an experiment to find the specific heat capacity of a metal block.

The diagram shows the apparatus used.



- (a) (i) The student measures the voltage and current.

Suggest **three** other measurements he needs to take.

1. temperature change [3]
2. mass
3. time ^{the} heater is on for

- (ii) Describe how these measurements could be used to find the specific heat capacity of the metal.

use $P = IV$ to find power then $Pt = E$ to find energy transferred then use $\frac{E}{m\Delta\theta} = c$ to calculate specific heat capacity [2]

- (b) The specific heat capacity obtained from the experiment is much larger than expected.

- Suggest **two** reasons for this difference.
- Suggest **two** improvements to the method that might give a more accurate value for the specific heat capacity.

REASONS

1. Heat escapes to surroundings [4]
2. Part of the heater is outside the block.

IMPROVEMENTS

1. Insulate the metal block
2. make sure all of the heater is in the block.

Total Marks for Question Set 23: 9

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