

4 This question is about pressure and density.

(a) Photograph A shows a pile of identical metal squares on a table.



Photograph A

There are 6 metal squares in the pile.

The weight of each metal square is 0.072 N.

The pressure exerted on the table by the pile of metal squares is 820 Pa.

(i) State the equation linking pressure, force and area.

(1)

(ii) Calculate the area of the table in contact with the metal squares.

(3)

area = m²

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(b) Photograph B shows the 6 metal squares spread out on the table.



Photograph B

- (i) Explain how spreading out the metal squares affects the pressure they exert on the table. (2)

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- (ii) Explain whether spreading out the metal squares affects the density of the material they are made from. (2)

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(Total for Question 4 = 8 marks)



5 This question is about electric motors.

(a) Diagram A shows a motor lifting a 780 g mass.

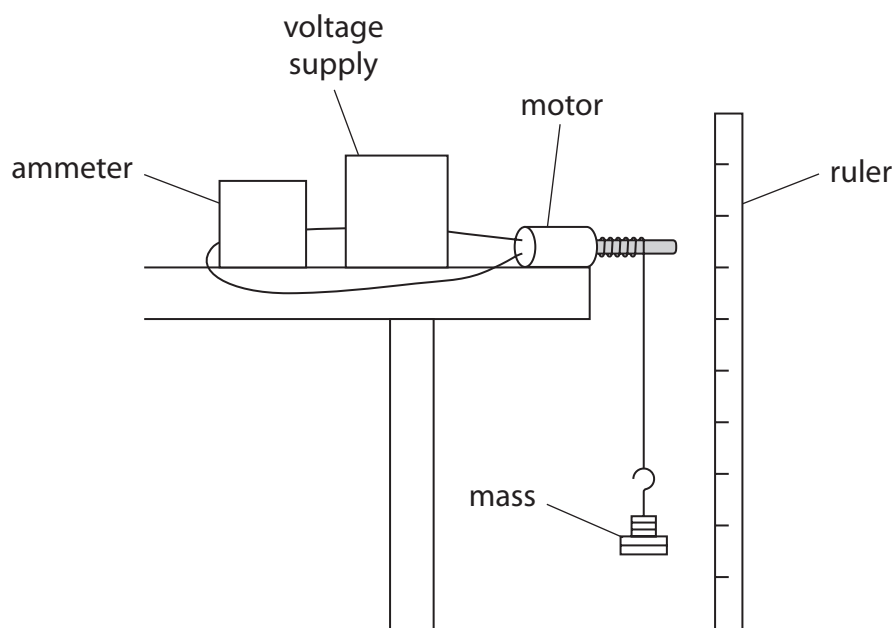


Diagram A

The current in the motor is 0.65 A and the voltage across it is 4.5 V.

The electrical energy transferred to the motor is 25 J.

(i) Calculate the time taken for the motor to lift the mass.

Give your answer to two significant figures.

(3)

time = s

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