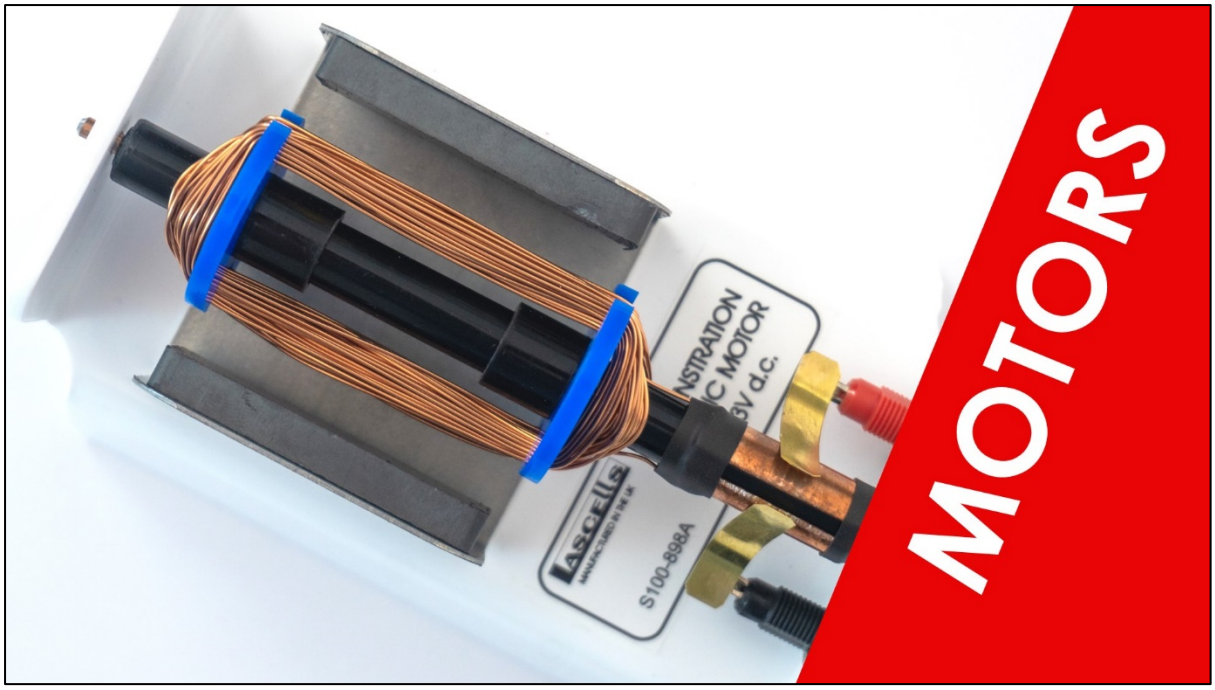
live

GCSE Physics

19th April 2021 – Energy and Motors

Suitable for ALL exam boards



This session looks at a question that covers many aspects of physics, including how a motor works.

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Question taken from:

Edexcel IGCSE Physics – January 2019 - Paper 1P (4PH0/4SC0) – Question 5

5 This question is about electric motors.

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

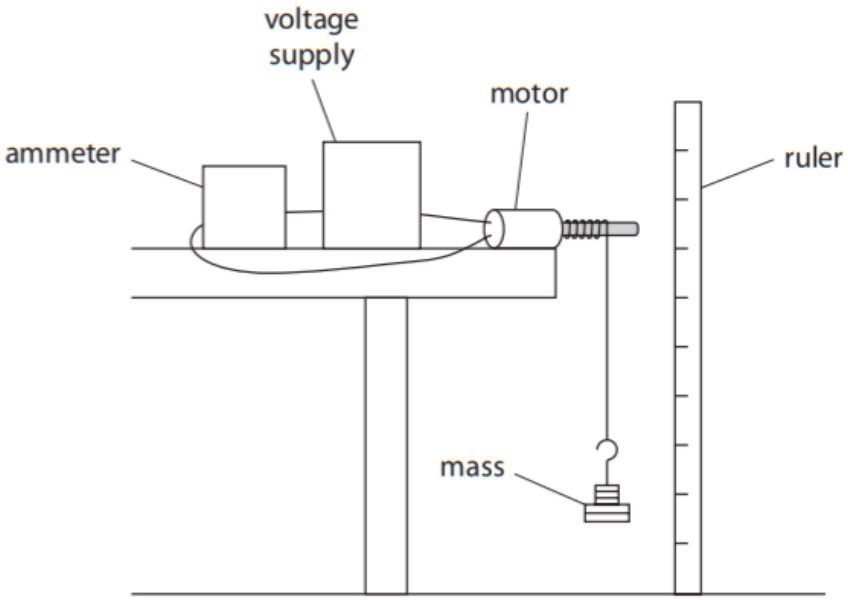

Diagram A

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

(ii) State the equation linking gravitational potential energy (GPE), mass, *g* and height.

(1)

(iii) The mass gains 5.0 J of gravitational potential energy when it is lifted.

Calculate the height the mass is lifted.

(3)

height = ... m

(iv) Explain why the amount of electrical energy transferred to the motor is greater than the amount of GPE gained by the mass.

(2)

(b) Diagram B shows a different electric motor.

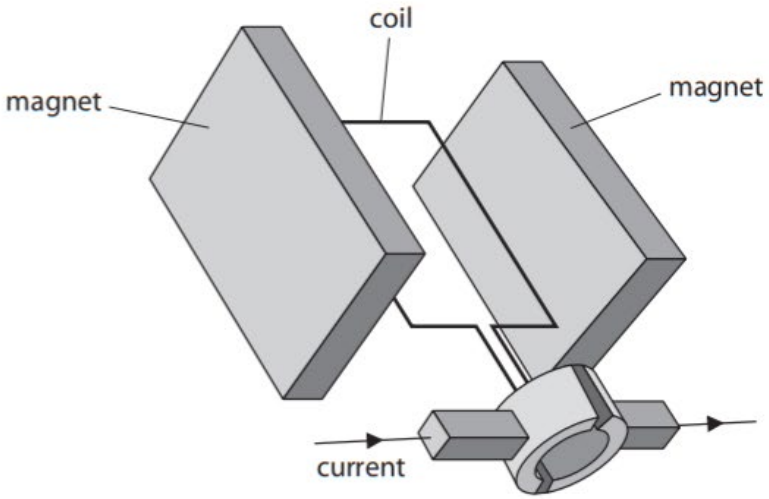

Diagram B

Explain how the current in the motor causes the coil to rotate.

(4)

(Total for Question 5 = 13 marks)