

Energy & Power

Question Paper

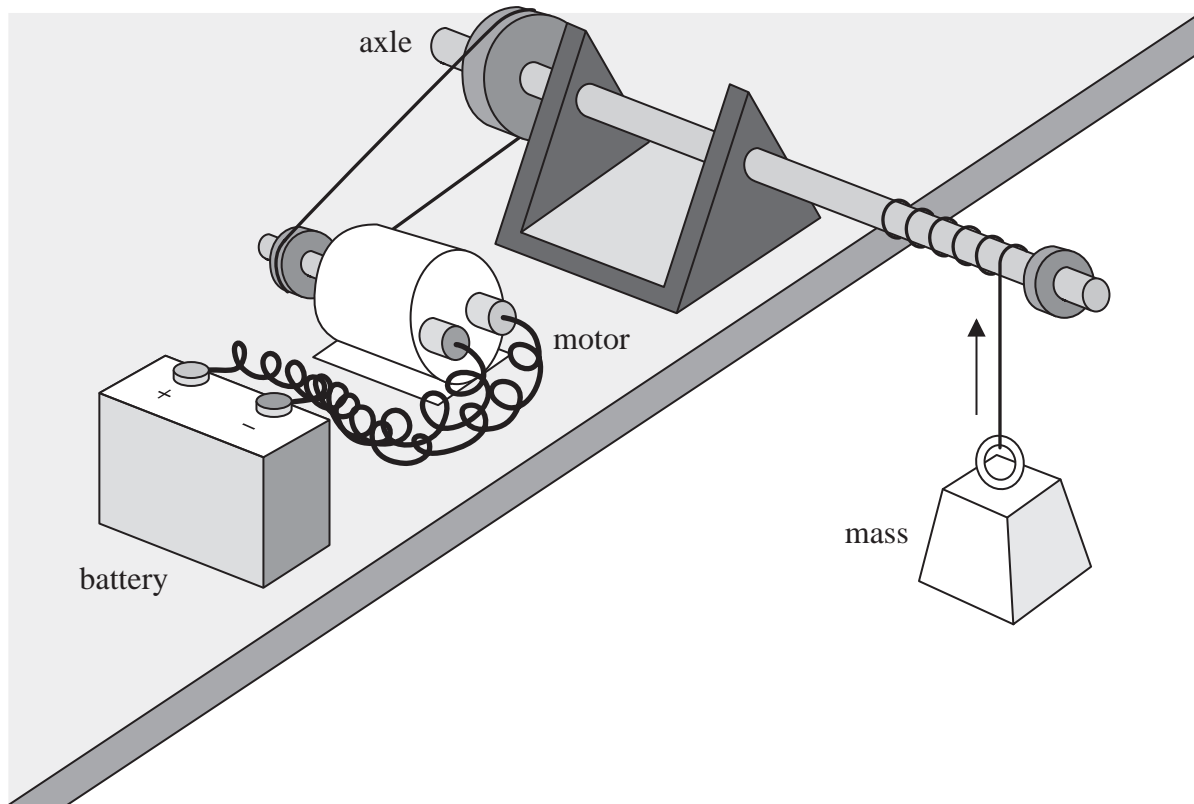
Level	International A Level
Subject	Physics
Exam Board	Edexcel
Topic	Mechanics
Sub Topic	Energy & Power
Booklet	Question Paper

Time Allowed:	54 minutes
Score:	/45
Percentage:	/100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

- 1 A student is asked to determine the efficiency of a 9 V electric motor when it is used to lift a 1 kg mass at a steady speed. The diagram below shows the apparatus to be used.



Write a plan for an experiment to do this.

You should:

- (a) state the quantities to be measured, (2)
- (b) explain your choice of measuring instrument for **two** of these quantities, (4)
- (c) comment on whether repeat readings are appropriate in this case, (1)
- (d) explain how the data collected will be used to calculate the efficiency of the motor, (3)
- (e) identify the main sources of uncertainty and/or systematic error, (2)
- (f) comment on safety. (1)

Save My Exams! – The Home of Revision

For more awesome GCSE and A level resources, visit us at www.savemyexams.co.uk/

A series of horizontal dotted lines for writing.

- 3 A student carried out an experiment to investigate the stretching of a length of rubber of rectangular cross-section. His results are shown below.

original length of rubber = 0.15 m

thickness of rubber = 1.05×10^{-3} m

width of rubber = 2.71×10^{-3} m

Extension / m	Force / N
0	0
0.0225	3.9
0.05	7.9
0.13	9.8
0.235	12.4
0.3	14.0
0.35	18.5

- (a) Criticise these results.

(2)

.....

.....

.....

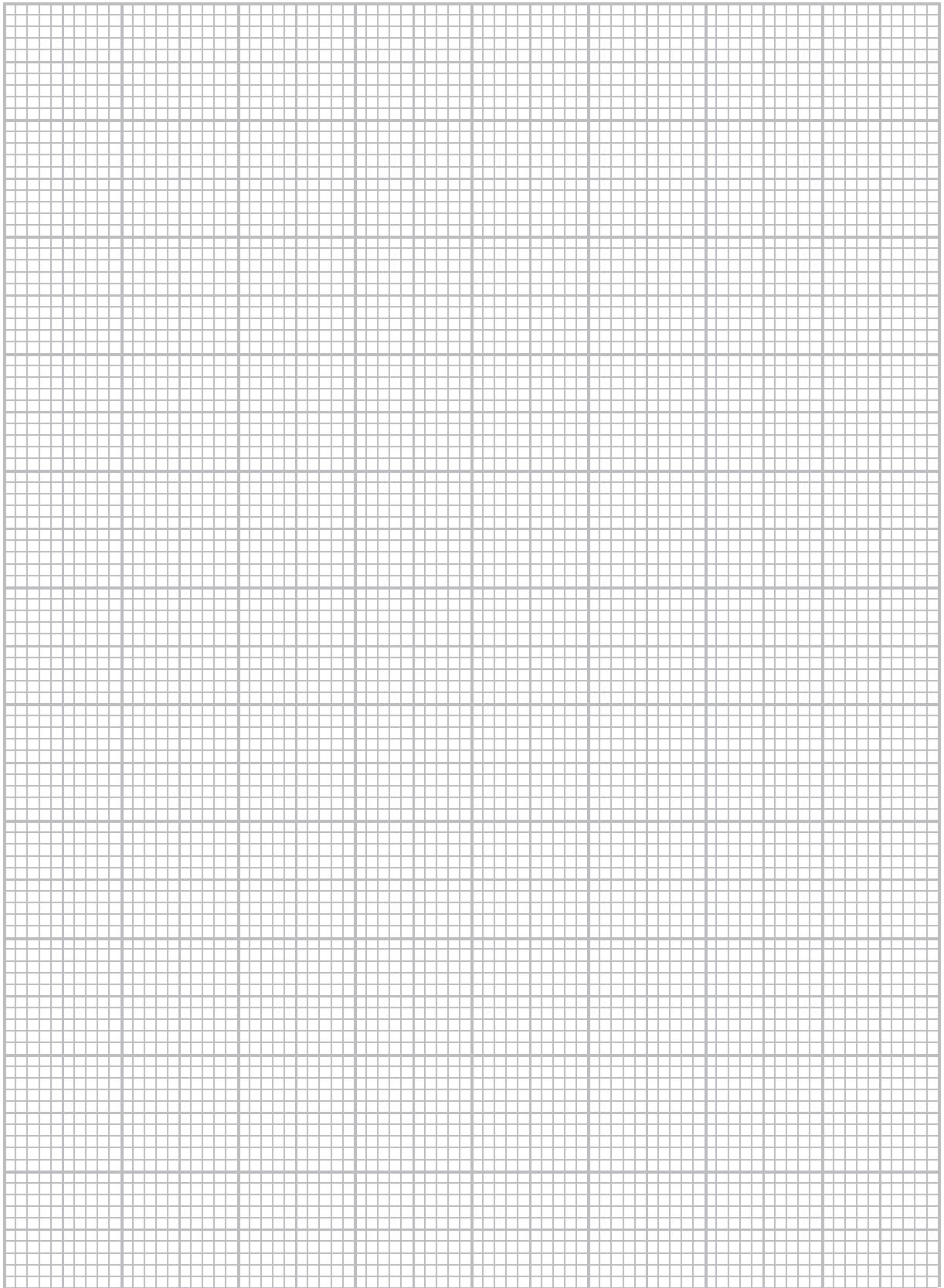
.....

.....

- (b) (i) Plot a graph of force on the y-axis and extension on the x-axis and draw a line of best fit.

(4)

Force/N



Extension/m

(ii) Comment on the shape of the graph.

(2)

.....

.....

.....

.....

(iii) The area under the graph represents the work done in stretching the rubber.
Determine the work done in stretching the rubber by 0.2 m.

(4)

.....

.....

.....

.....

.....

.....

.....

Work done =

(c) For the last set of results in the table calculate the stress and strain. State an assumption you have made.

(6)

.....

.....

.....

.....

.....

Stress =

.....

.....

.....

.....

.....

Strain =

Assumption.....

.....

(Total for Question 3 = 18 marks)
