Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic : 8_Energy

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Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Q1.

Some questions must be answered with a cross in a box (☒). If you change your mind about an answer, put a line through the box (☒) and and then mark your new answer with a cross (☒).

Three students carry out an investigation to determine their powers when running up stairs.

Figure 14 shows a diagram of the stairs with four distances, A, B, C and D, marked.

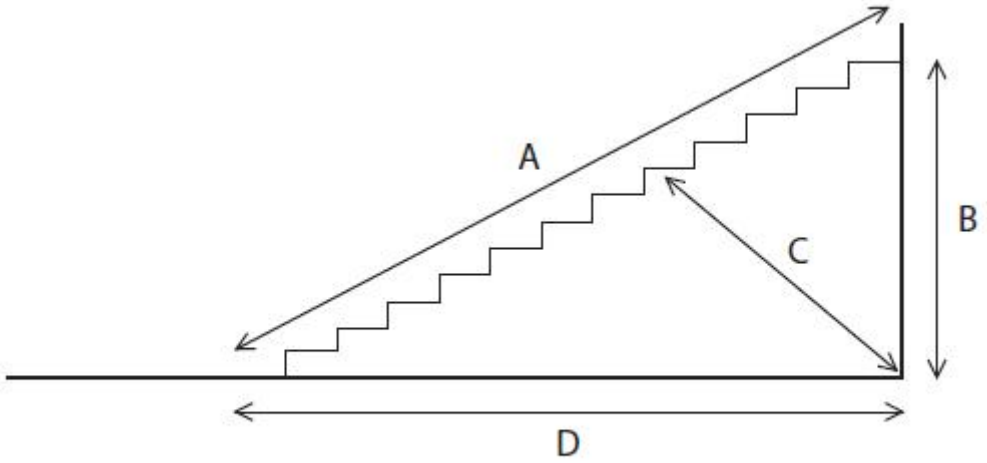

Figure 14

The students need to calculate the work done against gravity.

Which distance should be used in the calculation?

(1)

- ☐ **A** A
- ☐ **B** B
- ☐ **C** C
- ☐ **D** D

(Total for question = 1 mark)

Q2.

Figure 8 shows part of a cart.

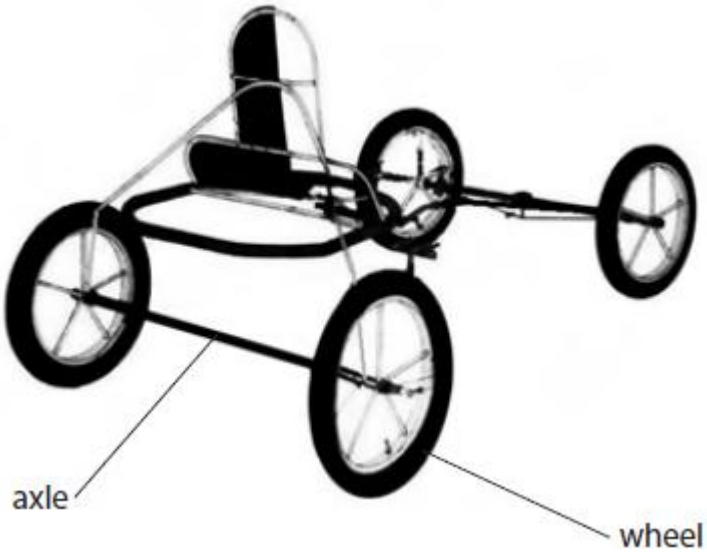

Figure 8

When the wheels turn the axles become warm.

(i) Explain why the axles become warm when the wheels turn.

(2)

.....

.....

.....

.....

(ii) Give **one** way of reducing the heating of the axles when the wheels turn.

(1)

.....

.....

(Total for question = 3 marks)

Q3.

This question is about energy transfers.

Figure 13 shows the apparatus used for investigating the transfer between gravitational potential energy and kinetic energy.

A metal ball is attached to a thread.

The ball is released from a starting position and swings on the thread.

The ball cuts a light beam at the bottom of its swing.

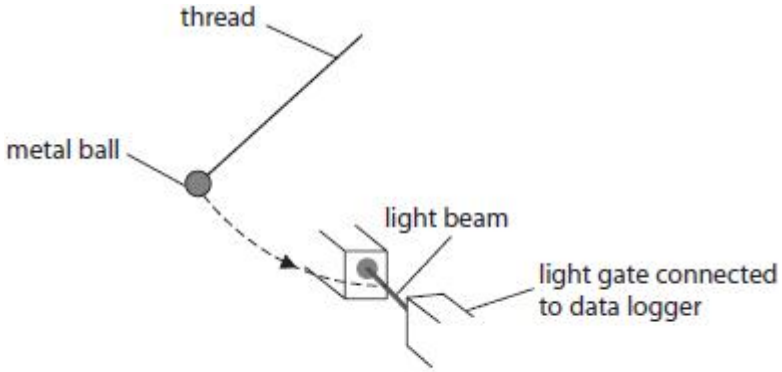

Figure 13

When the ball cuts the light beam, the speed of the ball is recorded by the data logger.

The ball was released 3 times from the same height and the speed measured each time.

The measurements of speed are given in Figure 14.

speed in m/s	1.31	1.27	1.16

Figure 14

Suggest **one** reason why the measurements of speed were repeated.

(1)

.....

.....

(Total for question = 1 mark)

Q4.

Answer the question with a cross in the box you think is correct (☒). If you change your mind about an answer, put a line through the box (☒) and then mark your new answer with a cross (☒).

A box has a mass of 90 kg.

Which of these is the weight of the box?

(1)

- ☐ **A** 9 N
- ☐ **B** 90 N
- ☐ **C** 900 N
- ☐ **D** 9000 N

(Total for question = 1 mark)

Q5.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Which of these is the equation for work done?

(1)

- ☐ **A** work done = force ÷ distance moved in direction of force
- ☐ **B** work done = force × distance moved in direction of force
- ☐ **C** work done = force ÷ distance moved at right angles to direction of force
- ☐ **D** work done = force × distance moved at right angles to direction of force

(Total for question = 1 mark)

Q6.

Figure 12 shows a truck lifting a box.

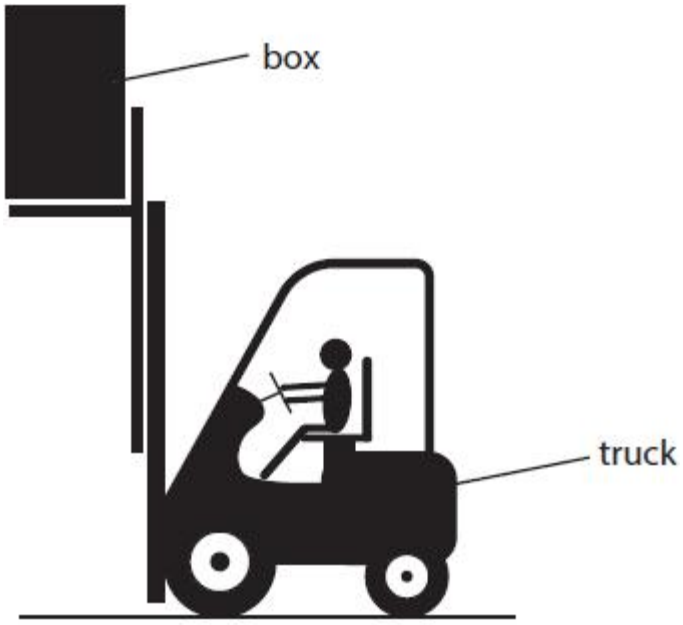

Figure 12

A student calculates the change in gravitational potential energy, ΔGPE, for the box at different heights.

Figure 13 shows the results of the student's calculations.

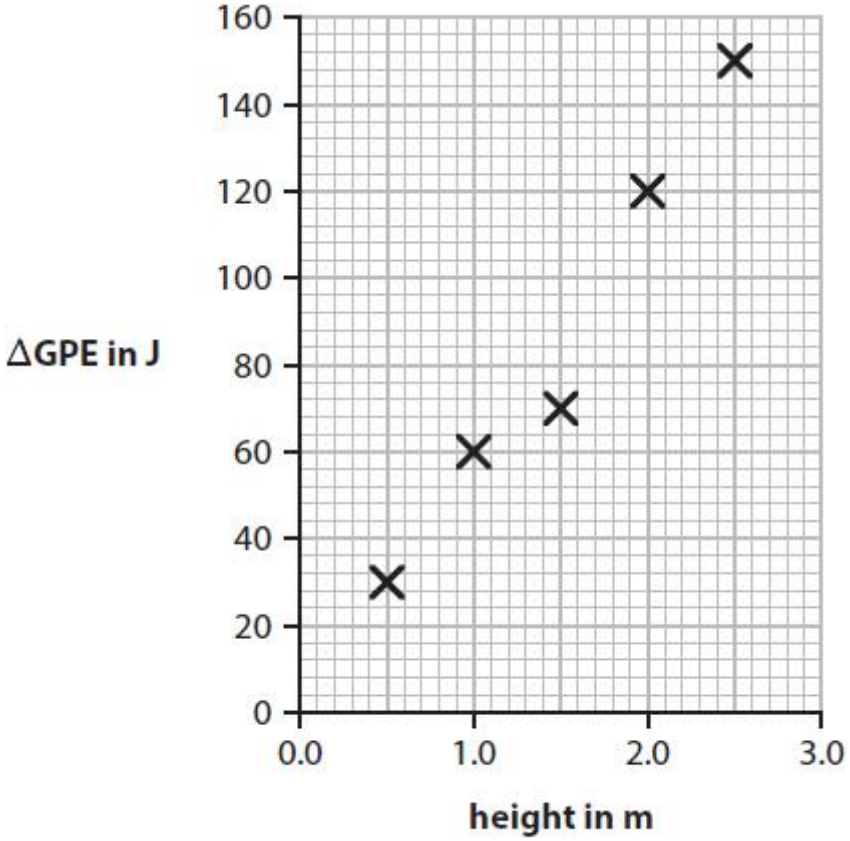

Figure 13

(i) The student has made one incorrect calculation.

On Figure 13, draw a circle round the **✖** for this incorrect calculation.

(1)

(ii) The truck lifts the box from the ground to a height of 2.0 m.

This takes a time of 5.0 s.
Using data from the graph in Figure 13, calculate the power needed to lift the box.

(3)

Use the equation

$$\text{power} = \frac{\Delta GPE}{\text{time}}$$

power = ... W

(Total for question = 4 marks)

Q7.

Identify a significant source of error in the investigation and state how this error can be reduced.

(2)

source of error

.....

.....

can be reduced by

.....

.....

(Total for question = 2 marks)

Q8.

(a) Which of these situations can increase the reaction time of a driver?

Put a cross (☒) in the box next to your answer.

(1)

- ☐ **A** an icy road
- ☐ **B** worn tyres on his car
- ☐ **C** stopping for a cup of coffee
- ☐ **D** driving for a long time without taking a break

(b) (i) A car engine produces an average driving force of 1200 N.

The car travels 8.0 m.
Calculate the work done by the force over this distance.

(2)

work done = ... J

(ii) The car has a mass of 1400 kg and travels at a velocity of 25 m/s.
Calculate the kinetic energy of the car.

(3)

kinetic energy = ... J