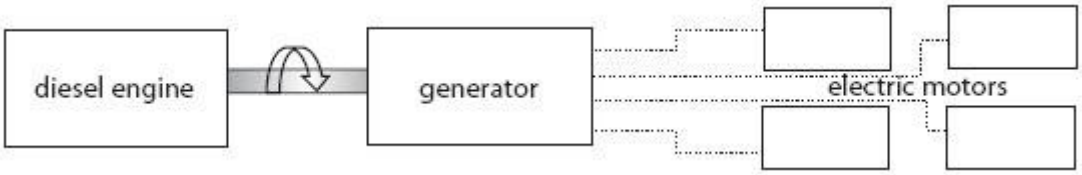
Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic : 8_Energy Forces Doing Work

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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

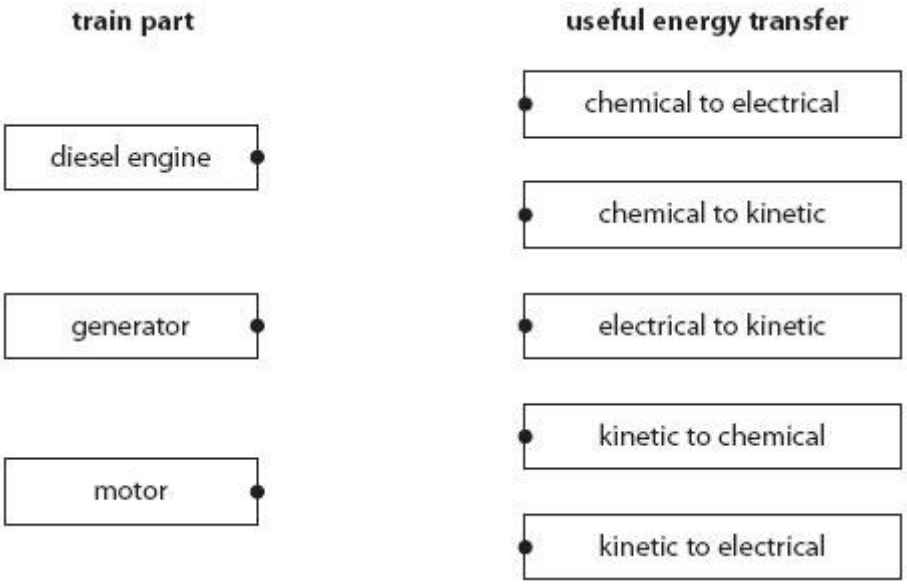
Q1.

A train is powered by a diesel engine.
The diesel engine is used to turn a generator.
The generator provides electricity for electric motors which drive the wheels.



(i) Draw one straight line from each train part to its useful energy transfer.

(3)



(ii) State **one** example of a non-useful energy transfer in the motor.

(1)

.....

Q2.

A pilot begins to land an aircraft.
(a) The height of the aircraft decreases from 200 m above the ground to 100 m.

(i) What happens to the gravitational potential energy of the aircraft?

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

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(1)

- ☒ **A** it becomes zero
- ☒ **B** it decreases
- ☒ **C** it does not change
- ☒ **D** it increases

(ii) The velocity of the aircraft remains constant.

What happens to the kinetic energy of the aircraft?

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

(1)

- ☒ **A** it becomes zero
- ☒ **B** it decreases
- ☒ **C** it does not change
- ☒ **D** it increases

(b) The aircraft lands with its wheels on the runway as shown.



The aircraft is moving forwards.

(i) Draw an arrow on the diagram to show the direction of the momentum of the aircraft.

(1)

(ii) The velocity of the aircraft when it lands is 75 m/s.

The mass of the aircraft is 130 000 kg.

Calculate the momentum of the aircraft.

(2)

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(iii) The aircraft comes to a stop.

State the momentum change of the aircraft from when it lands to when it stops.

(1)

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(c) When the aircraft lands, the momentum of each passenger also changes.

(i) Explain why it is more comfortable for a passenger if the aircraft takes a longer time to slow down.

(2)

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(ii) Suggest why some aircraft need a very long runway to land safely.

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(2)

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(Total for Question is 10 marks)

Q3.

Some students investigate the efficiency of electric motors.
One of the students states that all of the energy supplied to a motor is transferred into other forms.
Complete the following sentence by putting a cross (☒) in the box next to your answer.
This statement is one example of the idea of

(1)

☒ **A** renewable energy

☒ **B** conservation of energy

☒ **C** non-renewable energy

☒ **D** sustainable energy

Q4.

This question is about energy transfers.

Figure 8 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.

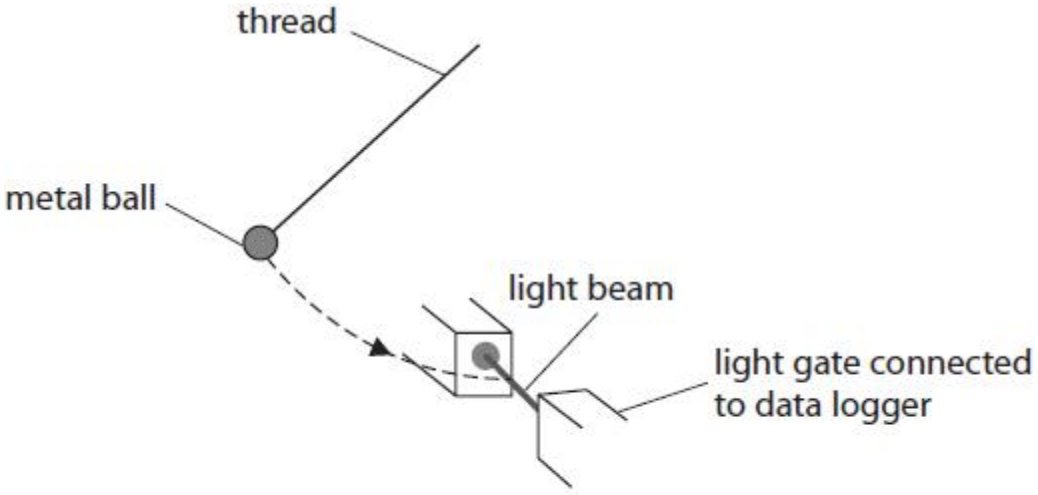


Figure 8

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

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

The measurements of speed are given in Figure 9.

speed in m/s	1.31	1.27	1.16

Figure 9

Figure 10 shows an end‑on view of the ball's swing from its starting position.

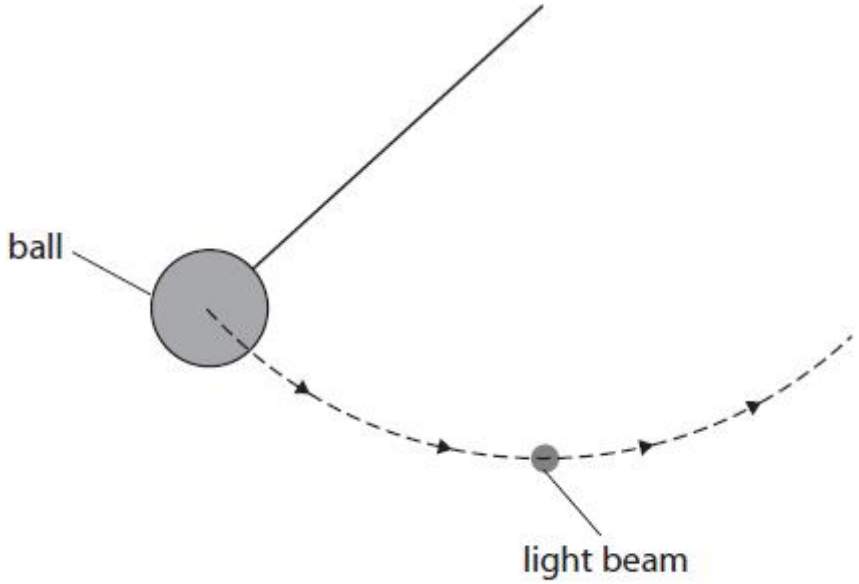


Figure 10

(i) To measure the change in vertical height, Δh, through which the ball moves, a ruler could be used.

Draw a ruler on Figure 10, placed in a position to measure the change in vertical height Δh.

(1)

(ii) Figure 11 shows a set square.

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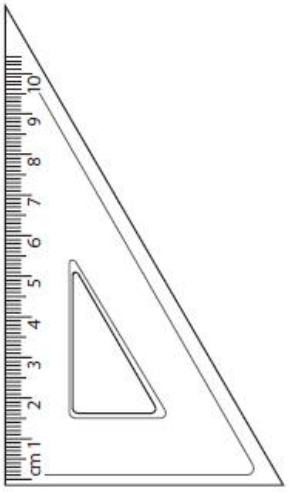


Figure 11

Describe how the measurement of the change in vertical height, Δh, could be improved using the set square. You may add to Figure 10 or Figure 11 to help your description.

(2)

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(Total for question = 3 marks)

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