Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 3_Conservation Of Energy

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Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Q1.

(i) The car is moving at 90 km/h when the driver has to stop.

Calculate the thinking time of the driver.
Using the equation:
time = distance ÷ average speed

(2)

thinking time = ... s

(ii) A car has a mass of 1300 kg.

Calculate the kinetic energy of the car when it is travelling at 20 m/s.

(2)

kinetic energy = ... J

(Total for question = 4 marks)

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Q2.

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 then mark your new answer with a cross(☒).

Which statement describes conservation of energy in a closed system?

(1)

- ☒ **A** when there are energy transfers, the total energy reduces
- ☒ **B** when there are energy transfers, the total energy does not change
- ☒ **C** when there are no energy transfers, the total energy reduces
- ☒ **D** when there are no energy transfers, the total energy increases

(Total for question = 1 mark)

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Q3.

A student lifts a toy car from a bench and places the toy car at the top of a slope as shown in Figure 16.

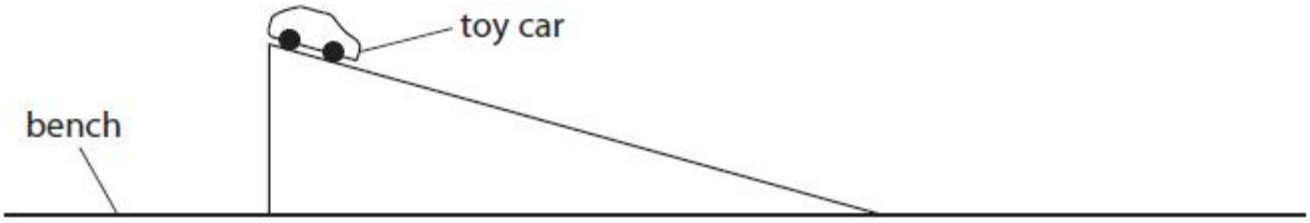


Figure 16

Describe an energy transfer that occurs when the student lifts the toy car from the bench and places the toy car at the top of the slope.

(2)

.....

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.....

.....

(Total for question = 2 marks)

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Q4.

Expanded polystyrene, used to insulate buildings, has different densities.
Figure 13 shows how the thermal conductivity of expanded polystyrene changes with the density of expanded polystyrene.

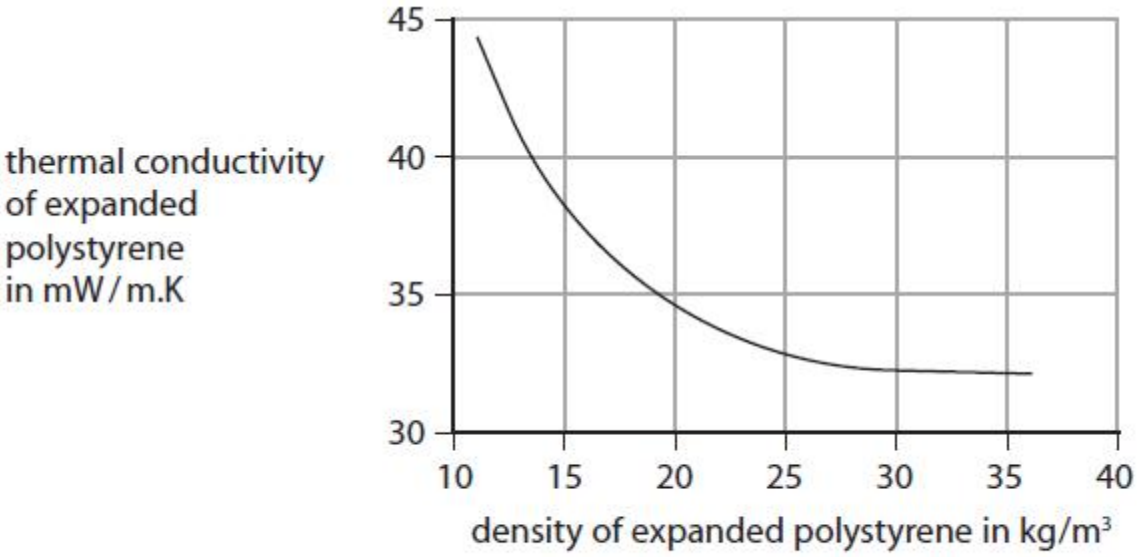


Figure 13

Using the graph in Figure 13, describe how the thermal conductivity of expanded polystyrene changes with the density of expanded polystyrene.

(2)

.....

.....

.....

.....

(Total for question = 2 marks)

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Q5.

A student uses the apparatus in Figure 12 to find out which of two materials, sand or sawdust, is the better insulator.



Figure 12

The student also has a kettle to boil water, a thermometer and a stop clock.

(i) Draw a labelled diagram to show how the student should set up the equipment to investigate which material is the better insulator.

(3)

(ii) Give **three** factors that the student must control in this investigation.

(3)

1 .....

.....

2 .....

.....

3 .....

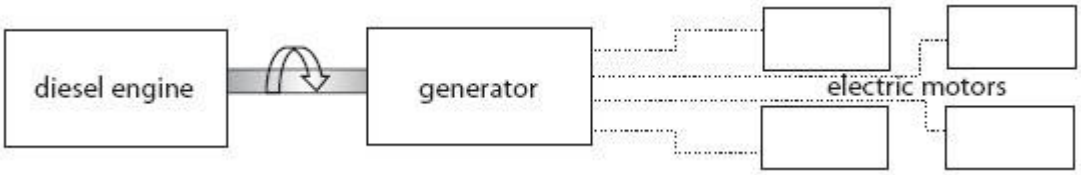
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(Total for question = 6 marks)

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Q6.

(a) 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)

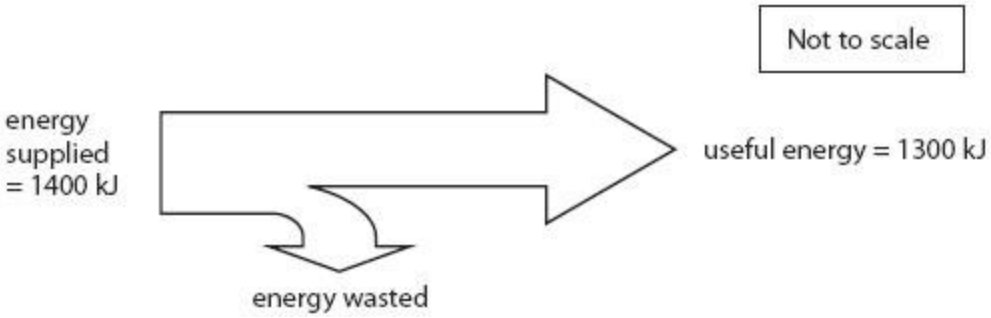
train part	useful energy transfer
diesel engine	chemical to electrical
	chemical to kinetic
generator	electrical to kinetic
	kinetic to chemical
motor	kinetic to electrical

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

(1)

.....

(b) The diagram represents the energy transfer in one second in the generator.



(i) Calculate the amount of energy wasted in one second in the generator.

(1)

.....

(ii) Calculate the efficiency of the generator.

(2)

.....

(c) The electric motors which drive the wheels are painted black.

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Suggest why the motors are painted black.

(1)

.....

.....

(Total for Question is 8 marks)

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