

Energy Transfer

Question Paper

Level	GCSE
Subject	Physics
Exam Board	Edexcel IGCSE
Module	Single Award (Paper 2P)
Topic	Energy Resources & Energy Transfer
Sub-Topic	Energy Transfer
Booklet	Question Paper

Time Allowed: 25 minutes

Score: /21

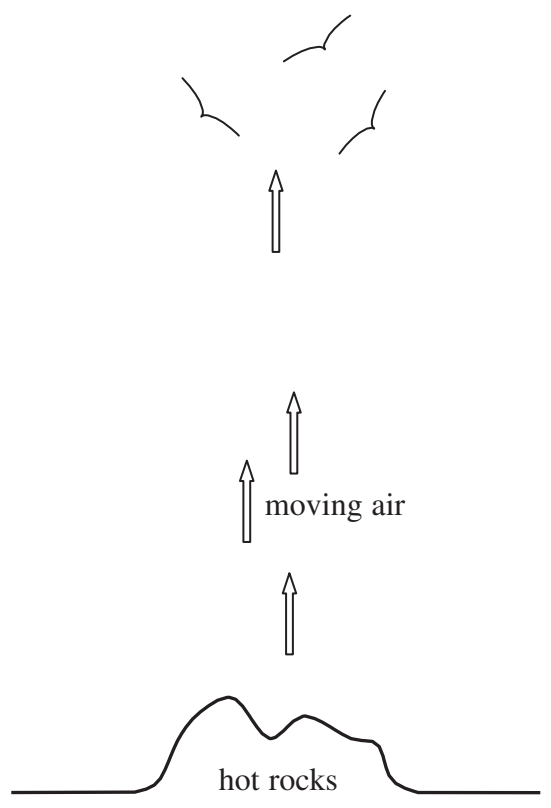
Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

1. On sunny days, birds can use a column of moving air to help them rise.

The diagram shows one of these air columns rising from hot rocks.



Describe how the process of convection causes this air movement.

(3)

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(Total for Question 1 = 3 marks)

2. James Dewar was a scientist who investigated liquid oxygen.

(a) He discovered that the boiling point of liquid oxygen is $-183\text{ }^{\circ}\text{C}$.

(i) Convert $-183\text{ }^{\circ}\text{C}$ to a temperature on the Kelvin scale.

(1)

Temperature = K

(ii) Use ideas about particles to describe the changes that happen when a liquid boils to form a gas.

(3)

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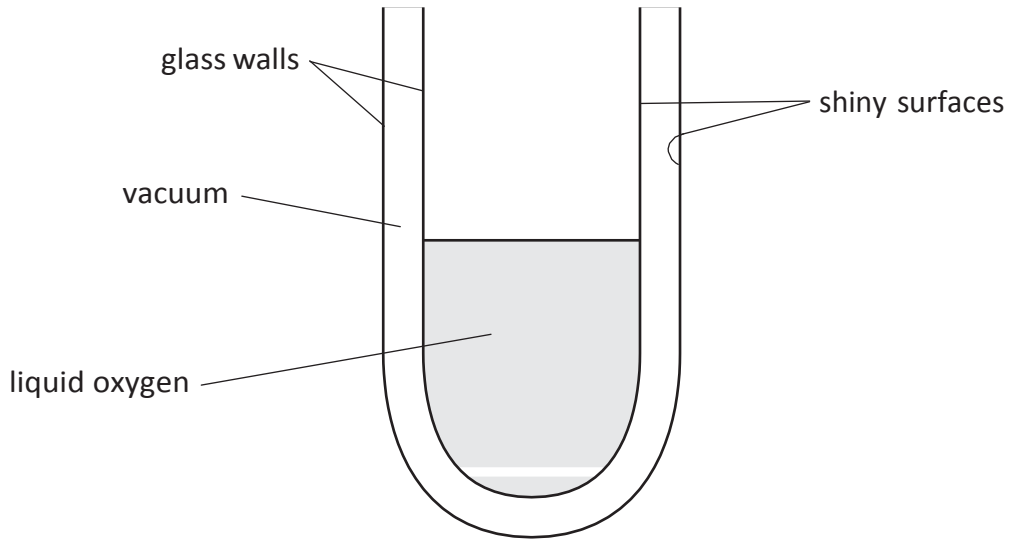
(b) Dewar invented a special flask for storing liquid oxygen in the laboratory.

It was designed to reduce heat flow from the air outside to the liquid oxygen inside.

The flask had two glass walls with a vacuum between them.

The inside glass surfaces were each covered with a thin layer of shiny metal.

The diagram shows a cross section of the flask.



(i) Explain how the **shiny surfaces** reduce the thermal energy transferred to the liquid oxygen from the laboratory.

(2)

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(ii) Explain how the **vacuum** reduces the thermal energy transferred to the liquid oxygen from the laboratory.

(2)

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(c) Dewar's flask did not have a lid when it was holding liquid oxygen.

Suggest why a lid was not needed.

(2)

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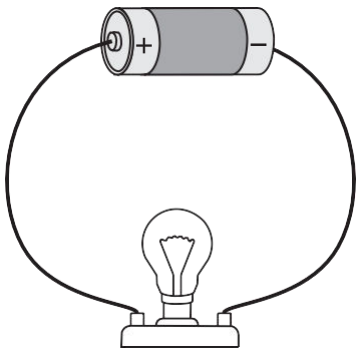
(Total for Question 2 = 10 marks)

3. (a) Which of these is a unit for energy?

- A joule
- B kilogram
- C newton
- D watt

(1)

(b) The diagram shows a cell connected to a lamp.



Use words from the box to complete the sentences.

Each word may be used once, more than once, or not at all.

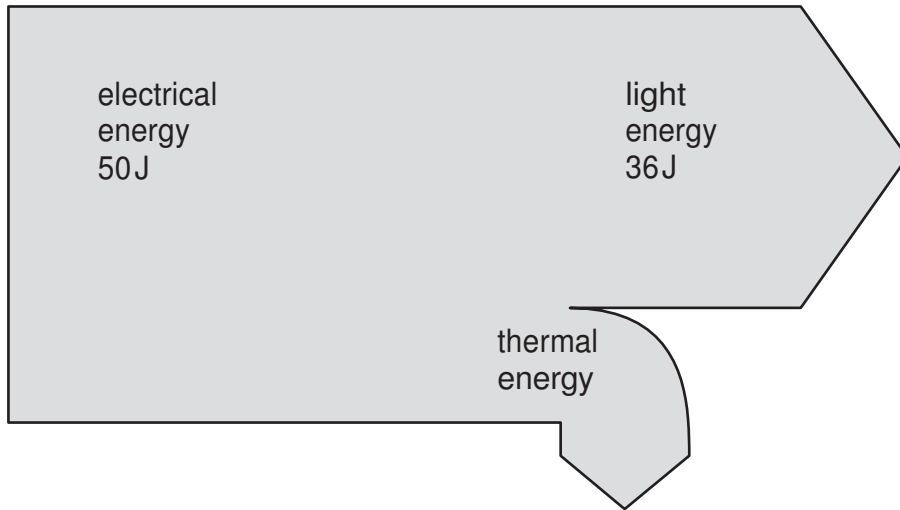
(3)

chemical	electrical	light	sound	thermal	work
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The cell converts..... energy into..... energy.

The lamp converts this energy into energy and energy.

(c) This is the Sankeyenergy diagram for a low energy lamp.



(i) Calculate the amount of thermal energy wasted in the lamp.

(1)

thermal energy = J

(ii) State the equation linking efficiency, useful energy output and total energy input.

(1)

(iii) Calculate the efficiency of the lamp.

(2)

efficiency =

(Total for Question 3 = 8 marks)