

Name:

Edexcel Style

Combined Science GCSE

Conservation of Energy Test

(Levels 4–9)

Date:

Time allowed: 50mins

Question	Links to Student Progress Sheet	Score	Total marks Available
1	3.6		5
2	3.2		6
3	3.5		10
4	3.13		6
5	3.3, 3.11		6
6	3.4, 3.9, 3.10		5
7	3.1		7
8	3.13		5
Total			50

Score	Estimated Grade
47 – 50	9
40 – 46	8
33 – 39	7
28 – 32	6
24 – 27	5
20 – 23	4
0 – 19	U

Please be aware that these grade boundaries are Twinkl's own, and may not be in-line with Edexcel's own.

Area for Improvement:

1. (a) Define the term 'energy store'.

(1)

(b) Draw a line from the type of energy to the correct example.

(4)

Electrostatic

A spring being stretched

Kinetic

A rock about to fall off a cliff

Gravitational potential

Magnets repelling each other

Elastic potential

A car moving

(Total for Question 1 = 5 marks)

2. A remote-controlled car contains an energy store. As the car moves, this store changes from one type to another.

(a) Describe the energy change in the remote-controlled car.

(2)

(b) Write the equation for kinetic energy.

(2)

(c) The car has a mass of 650g and is moving at a speed of 12m/s.

Calculate its kinetic energy.

(3)

(Total for Question 2 = 6 marks)

3. (a) State the four ways energy can be transferred between stores.

(4)

- 1. _____
- 2. _____
- 3. _____
- 4. _____

(b) State the energy transfers and how it is transferred in the following:

(i) A rock dropped from a cliff.

(3)

- _____
- _____
- _____
- _____
- _____

(ii) A kettle boiling.

(3)

- _____
- _____
- _____
- _____
- _____

(Total for Question 3 = 10 marks)

4. The government has decided that, by the year 2025, it would like all traditional coal fired power stations to be closed down and replaced by alternative renewable energy supplies.

Explain the benefits and disadvantages of replacing the power stations with renewable energy.

(6)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

(Total for Question 4 = 6 marks)

5. (a) Write the equation to calculate the efficiency of a machine.

(1)

(b) State two types of useful energy given out by a hairdryer

(2)

1. _____

2. _____

(c) A hairdryer transfers 1200J of energy, 5 J of which is transferred as wasted energy.

Calculate the efficiency of the hair dryer. Give your answer to 2 decimal points.

(3)

(Total for Question 5 = 6 marks)

6. (a) Explain the term 'conservation of energy'.

(1)

(b) Sankey diagrams can be used to show the energy transfers taking part in a process.

- (i) Sketch a Sankey diagram to illustrate an electric hob supplied with 150J of electrical energy, with 100J transferred as thermal energy and 50J as wasted energy.

(3)

- (ii) How can lubrication increase a machines efficiency?

(2)

- (iii) Explain how cavity walls reduce the rate of energy transfer by heating.

(2)

(Total for Question 6 = 5 marks)

7. (a) Complete the sentence.

Gravitational Potential Energy is...

(1)

(b) Write the equation for Gravitational Potential Energy.

(1)

(c) State the unit of Gravitational Potential Energy.

(1)

(d) An eagle has a mass of 3kg and is flying at a height of 100m.

What is its Gravitational Potential Energy, assuming $g = 10\text{N/kg}$?

(1)

(e) A parachutist with a mass of 67kg is 15km above the ground.

How much Gravitational Potential Energy does the parachutist have, assuming $g = 10\text{N/kg}$?

Give your answer in KJ. All workings must be shown.

(3)

(Total for Question 7 = 7 marks)

8. (a) What are biofuels? Give an example.

(2)

(b) State one advantage and one disadvantage of using biofuels as source of energy.

(2)

(c) Car companies have now started producing hybrid cars.

What does the term 'hybrid' mean in relation to cars?

(1)

(Total for Question 8 = 5 marks)

TOTAL FOR PAPER = 50 MARKS