Natural Sciences · Grade 7

Energy and Change

Term 3 | 7 questions | CAPS-aligned

TOTAL 52 MARKS

NAME AND SURNAME _____ CLASS _____ DATE _____

Instructions

1. This question paper consists of SEVEN questions. Answer all the questions.
2. Answer all the questions on the question paper itself, in the spaces provided.
3. Read each question carefully before you begin writing.
4. Write neatly and legibly. Work that cannot be read cannot be marked.
5. You may use a pencil and a ruler for drawings and diagrams.

Question	Content of the question	Marks	Obtained
1	Multiple choice	4	
2	Matching	4	
3	Terminology	5	
4	Case study	18	
5	Diagrams	7	
6	Longer questions	7	
7	Electricity in the home	7	
	Total	52	
	Percentage		%

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1 Multiple choice

4 marks

Choose the correct answer and circle its letter.

PRACTICE EXAMPLE · DO THIS ONE TOGETHER FIRST

Where do plants get their energy from?

a The soil b The Sun c The wind

Plants capture sunlight to make food, so the answer is b. Circle the b.

This example does not count for marks. It only shows you how to answer.

1.1 Which material is the best conductor of heat? **(1)**

(a) wood (b) plastic (c) copper

1.2 Which device changes electrical energy mainly into sound energy? **(1)**

(a) a kettle (b) a loudspeaker (c) a light bulb

1.3 The energy of a raised stone is: **(1)**

(a) kinetic energy (b) sound energy (c) potential energy

1.4 Which one is a non-renewable energy source? **(1)**

(a) natural gas (b) wind (c) hydro-electric power

2 Matching

4 marks

Match the description in COLUMN A with the correct word in COLUMN B. Write only the LETTER. One word is left over.

2.1 **(4)**

COLUMN A	COLUMN B	Answer
1. A fuel formed over millions of years from the remains of plants and animals	A. Hydro-electric power	1 = _____
2. Heat transfer through a moving liquid or gas	B. Gravity	2 = _____
3. Electricity generated by flowing water that turns turbines	C. Convection	3 = _____
4. Energy that a moving object has	D. Fossil fuel	4 = _____
	E. Kinetic energy	

3 Terminology

5 marks

3.1 Write the correct term next to each description. **(5)**

Description	Term
A material that does not let heat pass through easily	
Energy stored in food and fuels	
A machine that uses wind to generate electricity	
Energy that is not usefully used	
An energy source that never runs out	

4 Case study

18 marks

SOURCE A · THE SCHOOL'S SOLAR GEYSER

The school installed a solar geyser on the hostel roof. It replaced an electric geyser that used 3 kW.

The first month's readings: the electric geyser used 540 kWh. The solar geyser used 95 kWh — the electric element only switches on when the water drops below 45 °C.

On cloudy days the usage was higher. In the second week, which had four rainy days, usage was 38 kWh against the first week's 14 kWh.

An investigation at the school.

4.1 The panel of the solar geyser is painted matt black. Explain why it is black and not shiny silver. **(2)**

4.2 The hot-water tank of the solar geyser is wrapped in a thick layer of glass wool. **(3)**

a. Why? (1)

b. Name TWO other examples of how people use materials like this to keep heat in or out. (2)

4.3 Why was usage higher in the second week? **(2)**

4.4 In which direction does heat always move between a hot object and a cold object? **(1)**

4.5 Explain how the Sun's energy heats ALL the water in the solar geyser. Use the words RADIATION, CONDUCTION and CONVECTION. **(3)**

4.6 Is solar power renewable or non-renewable? Give a reason. **(2)**

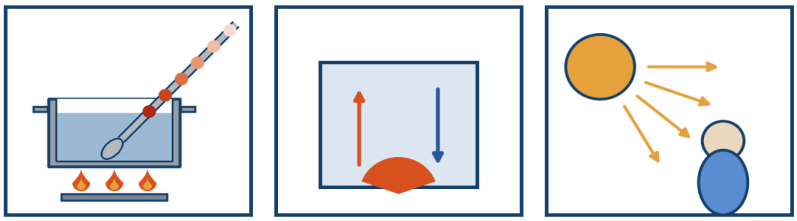
4.7 Explain why the useful energy that comes out of a system, such as a geyser, is always LESS than the energy that goes in. **(2)**

4.8 The school wants to make the investigation more reliable. Name THREE things they could do. **(3)**

5 Diagrams

7 marks

5.1 Study the diagrams below and name the kind of heat transfer at each letter. **(3)**



A: _____ B: _____ C: _____

5.2 Write next to each source whether it is RENEWABLE or NON-RENEWABLE. **(4)**

Energy source	Renewable / Non-renewable
Coal	
Tidal power	
Nuclear fuel	
Biomass	

6 Longer questions

7 marks

6.1 Explain in your own words how CONDUCTION works. **(3)**

6.2 Describe the energy conversions at a coal power station, from the coal to the light in your house. **(4)**

7 Electricity in the home

7 marks

7.1 A family has an electric heater and an air conditioner. Where in a room should each one be placed: near the floor or near the ceiling? Explain. **(2)**

7.2 Name THREE ways to save electricity, and say why each one helps. **(3)**

7.3 Why does a household save money AND help the country when it uses less electricity? **(2)**

Total **52 marks**



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