



General Certificate of Secondary Education
2024–2025

Centre Number

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Candidate Number

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Double Award Science: Physics

Unit P1

Foundation Tier



[GDW31]

GDW31

FRIDAY 28 FEBRUARY 2025, MORNING

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Complete in black ink and use a dark HB pencil for drawings and graphs. **Do not write with a gel pen.**

Answer **all nine** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 60.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You may use a scientific calculator.

Quality of written communication will be assessed in Question 8.

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16GDW3101

1 Energy can be changed from one form to another.

Complete the boxes to show the **main** energy change that is happening in each of the cases below.

An example has been completed for you.

Example: A toaster



electrical
energy



heat
energy

Burning coal



energy



energy

A microphone

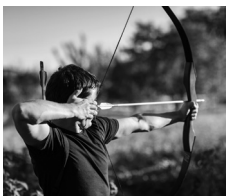


energy



energy

A stretched bow firing an arrow horizontally



energy



energy

[6]



2 Some energy resources are given in the box below.

natural gas	oil	wind
tidal	coal	geothermal

- (i) State the meaning of a **renewable** energy resource and give two examples from the box above.

Meaning: _____

Example 1: _____

Example 2: _____ [3]

- (ii) State the meaning of a **non-renewable** energy resource and give two examples from the box above.

Meaning: _____

Example 1: _____

Example 2: _____ [3]

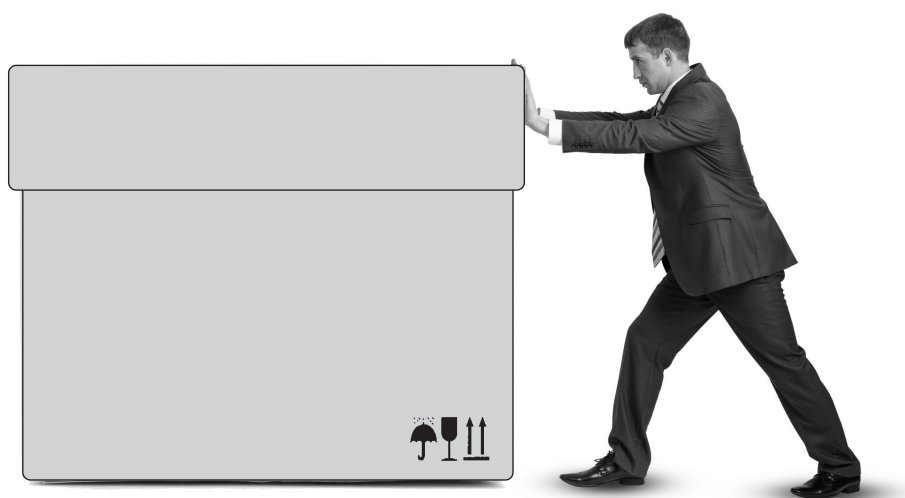
- (iii) Give an example of how a **non-renewable** energy resource can harm the environment.

_____ [1]

[Turn over



- 3 (a) A box is pushed along a flat surface as shown below.



A force of 50 N is used to push the box a distance of 2 m.

Calculate the work done.

Show your working out.

Work done = _____ J [3]



(b) The work done in lifting another box is 15 J.

It takes 3 seconds to lift the box.

Calculate the power developed in lifting the box.

Include the unit in your answer.

Show your working out.

Power = _____ [4]



- 4 (a) A cat has a mass of 4.5 kg.

Calculate the weight of the cat.

Show your working out.

Weight = _____ N [2]

- (b) Another cat climbs a tree.



This cat has a mass of 3.76 kg and sits at a height of 5.3 m.

Calculate the gravitational potential energy of the cat at this height.

Give your answer to one decimal place.

Show your working out.

Gravitational potential energy = _____ J [4]



5 This question is about nuclear fission.

(i) Name a suitable fuel for nuclear fission.

_____ [1]

(ii) State fully what must happen **first** for a nucleus to undergo fission.

_____ [2]

(iii) Give two products of a nuclear fission reaction.

1. _____

2. _____ [2]

(iv) Name the **particle** that is responsible for causing a chain reaction.

_____ [1]

[Turn over



- 6 (a) A vase is placed on a table as shown below.



- (i) The combined weight of the vase, its contents and the table is 62.4 N.

The pressure exerted on the floor is 5.2 N/cm².

Calculate the area of the legs of the table in contact with the floor.

Show your working out.

Area = _____ cm² [3]



(ii) Some water is poured into the vase.

State what will happen to the pressure exerted on the floor.
Explain your answer.

The pressure will _____ because _____

_____ [2]

(b) A box is placed on a table.

The box exerts a pressure of 83 N/m^2 on the table.

What is the pressure exerted by the box in pascals (Pa)?

Pressure = _____ Pa [1]

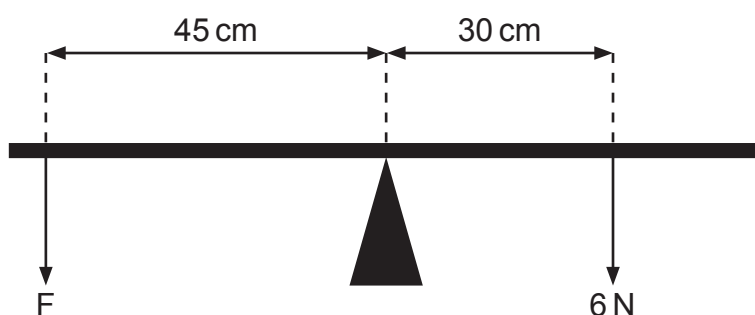
[Turn over



- 7 (a) Explain fully how you would calculate the moment of a force and give the unit.

Unit for a moment = _____ [4]

- (b) A uniform metre rule is balanced at its midpoint as shown below.



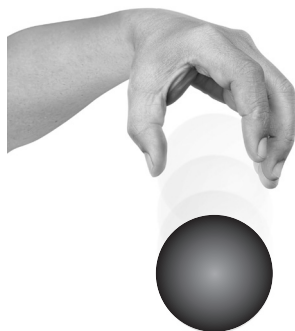
Use the Principle of Moments to calculate the size of force F.

Show your working out.

F = _____ N [4]



- 8 This question is about the Principle of Conservation of Energy when a ball is dropped from rest.



In this question you will be assessed on the quality of your written communication skills, including the use of specialist scientific terms.

State the Principle of Conservation of Energy.

State the form of energy stored by the ball when it is held at rest above the ground.

Give the main form of energy gained by the ball as it falls towards the ground.

What two forms of energy are produced when the ball hits the ground?

_____ [6]

[Turn over



9 This question is about the dangers of radioactivity.

(a) Radioactive emissions can cause ionisation.

What is meant by ionisation?

What damage can ionisation cause to living cells?

 [3]

(b) Give the name of one type of radioactive emission that **can** pass through skin.

Give the name of the type of radioactive emission that **cannot** pass through skin.

 [2]

(c) State three ways to reduce the risk to a person when handling radioactive sources.

1.

2.

3.

 [3]

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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
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8	
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Total Marks	
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Examiner Number

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