



Rewarding Learning

General Certificate of Secondary Education
2014

Centre Number

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Candidate Number

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GCSE Physics

Unit 1

Foundation Tier



[GPH11]

GPH11

THURSDAY 12 JUNE, MORNING

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

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

Write your answers in the spaces provided in this question paper.

Complete in blue or black ink only. **Do not write in pencil or with a gel pen.**

Answer **all six** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 80.

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

Quality of written communication will be assessed in Question **1(a)(iii)**.

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24GPH1101

- 1 (a) (i) In 2009 the sprinter Usain Bolt ran the 100 m sprint in a time of 9.58 s.
Calculate his average speed during this race.

You are advised to show clearly how you get your answer.

Average speed = _____ m/s [2]

- (ii) Explain why your answer is an average speed.

[1]

Examiner Only	
Marks	Remark

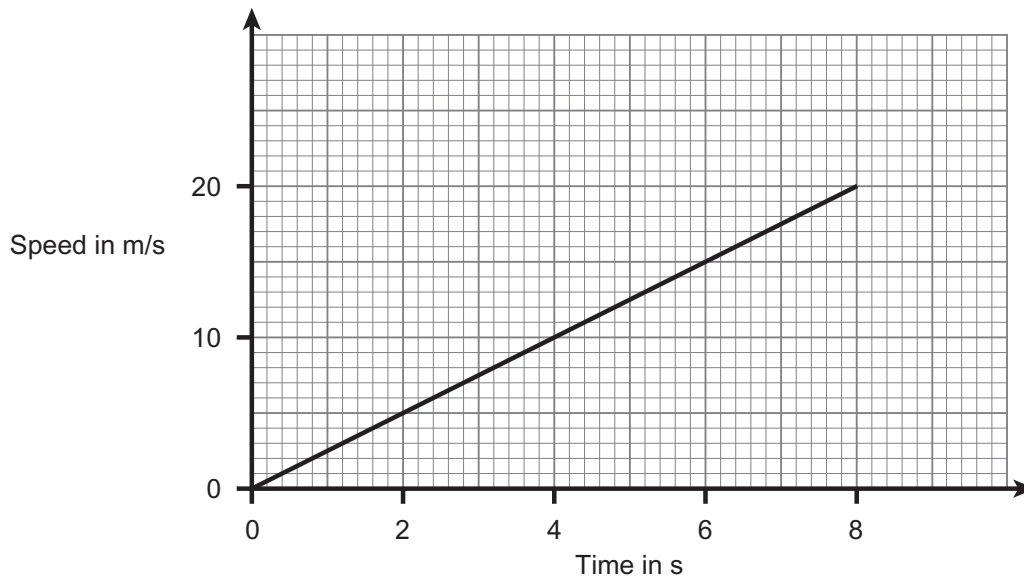
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(b) The speed–time graph for the motion of a car is shown below.



- (i) Using the graph calculate the total distance travelled by the car in 8.0s.

You are advised to show clearly how you get your answer.

Distance = _____ m [3]

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Marks	Remark

Examiner Only	
Marks	Remark





- (i) What type of input energy is used in a fossil fuel power station?
Choose your answer from the types of energy listed below.

electrical : nuclear : heat : chemical : gravitational potential

_____ [1]

- (ii) Use the Law of Conservation of Energy to calculate the numbers missing from the small dotted boxes. **Write these numbers in the appropriate boxes.** Use the space below for any calculations.

[3]

- (iii) In the box below write down the equation you would use to find the efficiency of a device.

[1]

- (iv) Use your equation to calculate the efficiency of the turbine generator.

You are advised to show clearly how you get your answer.

Efficiency = _____ [3]

- (v) What resource do fossil fuel power stations need that makes it desirable for them to be close to a river, or a lake or to be built on the coast?

_____ [1]

Examiner Only	
Marks	Remark
Total Question 2	

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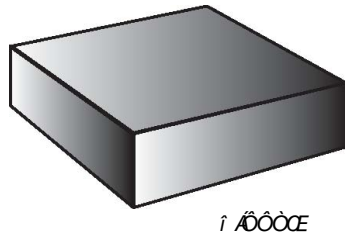


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(c) (i) The density of aluminium is 2.7 g/cm^3 .
Explain, **without giving a formula**, what this means.

_____ [1]

(ii) You are given a block of metal as shown in the diagram below.



List the measurements you would make and the calculations you would carry out to find the density of the metal.

Measurements

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

Calculations

1. _____
2. _____ [4]

Examiner Only	
Marks	Remark
Total Question 3	

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- (v) The table below shows some of the factors that may affect the size of the force needed to move an object in a circle. Complete the table using the terms increases, decreases or has no effect. You should assume that only one factor at a time is changing.

Factor being changed	The effect on the size of the force
The speed is increased, the mass and radius remain constant	
The radius is increased, the mass and speed remain constant	
The direction of rotation is reversed, the speed, mass and radius remain constant	

[3]

- (b) Golfers when hitting a golf ball sometimes want it to go as far as possible. They achieve this by following through. This means the golf club exerts a force on the ball for as long as possible.



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- (i) Write down the equation that connects the momentum change that the ball experiences, the force acting on the ball and the time for which the force acts.

_____ [1]

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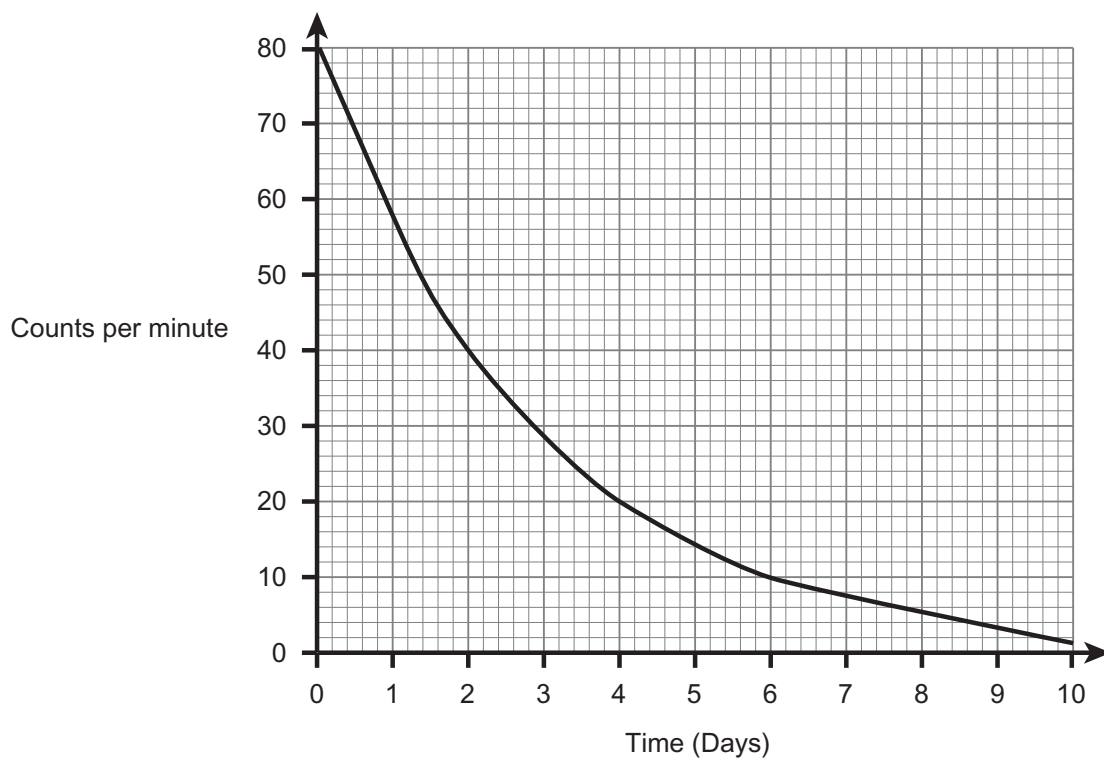
(iii) Which radiation can pass through the sheet of paper but is stopped by a thin sheet of aluminium?

_____ [1]

(iv) Which radiation can only be stopped by a thick block of lead?

_____ [1]

(c) The graph below shows how the activity of a radioactive substance changes with time.



(i) What is the half-life of this radioactive substance?

_____ [1]

(ii) What would be the counts per minute after 2 half-lives have passed?

_____ [1]

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Marks Remark

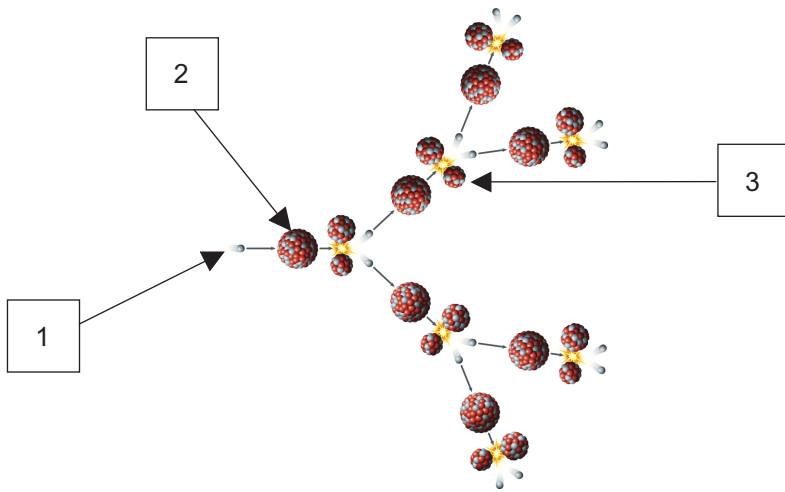
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(d) The diagram below illustrates a nuclear reaction that takes place in a nuclear reactor.



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Marks Remark

(i) What is the name of this nuclear process?

_____ [1]

(ii) Name the particle marked 1. _____ [1]

(iii) Particle 1 is absorbed by nucleus 2.
State what nucleus 2 is and explain how nucleus 3 is formed.

_____ [2]

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Question Number	Marks
1	
2	
3	
4	
5	
6	

Total Marks	
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Examiner Number

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