edexcel

Entry Level Certificate in Science

Sample Assessment Materials

Pearson Edexcel Entry Level Certificate in Science (NSC0)

First certification from June 2017

Issue 1

Pearson

Edexcel, BTEC and LCCI qualifications

Edexcel, BTEC and LCCI qualifications are awarded by Pearson, the UK's largest awarding body offering academic and vocational qualifications that are globally recognised and benchmarked. For further information, please visit our qualification websites at www.edexcel.com, www.btec.co.uk or www.lcci.org.uk. Alternatively, you can get in touch with us using the details on our contact us page at qualifications.pearson.com/contactus

About Pearson

Pearson is the world's leading learning company, with 40,000 employees in more than 70 countries working to help people of all ages to make measurable progress in their lives through learning. We put the learner at the centre of everything we do, because wherever learning flourishes, so do people. Find out more about how we can help you and your learners at qualifications.pearson.com

Original origami artwork: Mark Bolitho
Origami photography: Pearson Education Ltd/Naki Kouyioumtzis

ISBN 978 1 4469 3974 1

Contents

Introduction	1
General marking guidance	3
Paper 2 Question paper	5
Paper 2 mark scheme	17
Paper 4 Question paper	21
Paper 4 mark scheme	33
Paper 6 Question paper	37
Paper 6 mark scheme	47

Introduction

The Pearson Edexcel Pearson Edexcel Entry Level Certificate in Science is designed for use in schools. It is part of a suite of Entry Level Certificate qualifications offered by Pearson.

This document contains:

- Paper 2: Biology 1B – Health, disease and the development of medicines
- Paper 4: Chemistry 1B – Separating mixtures, breaking down substances, acids and metals
- Paper 6: Physics 1B – Waves and radiation.

These sample assessment materials have been developed to support this qualification and will be used as the benchmark to develop the assessment students will take.

Specimen tests and mark schemes for the following will be published and available on our website in October 2016:

- Paper 1: Biology 1A – Cells, genetics, inheritance and modification
- Paper 3: Chemistry 1A – Atoms, compounds and states of matter
- Paper 5: Physics 1A – Forces, movement and energy.

General marking guidance

- All students must receive the same treatment. Teachers must mark the last student in exactly the same way as you marked the first.
- Mark schemes should be applied positively. Students must be rewarded for what they have shown they can do rather than be penalised for omissions.
- Teachers should mark according to the mark scheme.
- All the marks on the mark scheme are designed to be awarded. Teachers should always award full marks if deserved, i.e. if the answer matches the mark scheme. Teachers should also be prepared to award zero marks if the student's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification/indicative content will not be exhaustive.
- Crossed-out work should be marked **unless** the student has replaced it with an alternative response.

Write your name here

Surname	Other names

Pearson Edexcel
Entry Level Certificate

Centre Number | | | | | |

Candidate Number | | | | |

Science

Paper 2: Biology 1B – Health, disease and the development of medicines

Sample assessment material for first teaching September 2016

For teacher's use only

Total Marks **/25**

Instructions

- Use black ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- Calculators may be used.

Information

- The total mark for this paper is 25.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

S55217A

1/1/

S 5 5 2 1 7 A 0 1 1 2

Pearson

Answer ALL questions.

1 Some bacteria, viruses and fungi can cause disease.

(a) Complete the sentence by underlining the correct answer in the box.

(1)

Mushrooms are

fungi
viruses
bacteria

(b) Complete the sentence by underlining the correct answer in the box.

(1)

The organisms that cause athlete's foot are

fungi
viruses
bacteria

(c) What word describes an organism that causes disease?

Tick the correct box (☒).

(1)

☒ **A** antibiotic

☒ **B** pathogen

☒ **C** white blood cell

☒ **D** yeast

(d) Name the organism that spreads malaria.

(1)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(e) Complete the sentence by underlining the correct answer in the box.

(1)

Cholera is caused by a bacteria that leads to

flu
damage to blood
diarrhoea

(Total for Question 1 = 5 marks)

2 Many people in England are obese.

Figure 1 shows how the percentage of obese men and women changed between 1994 and 2011.

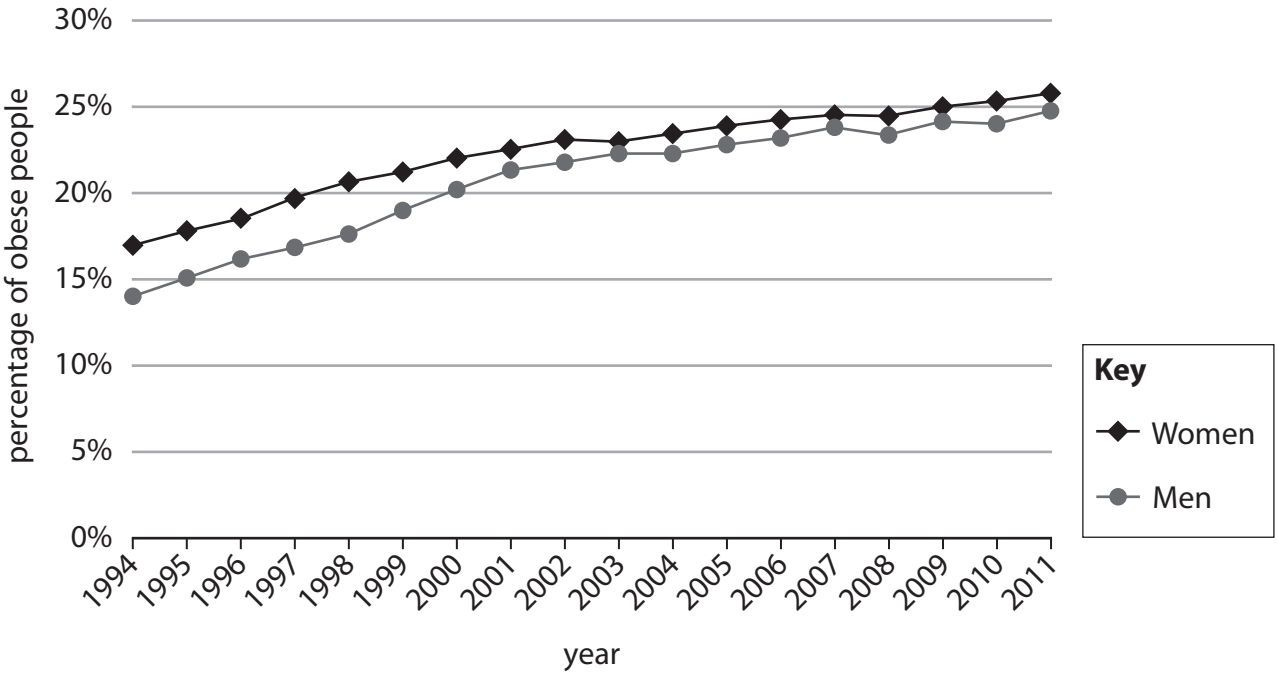


Figure 1

(a) What percentage of women were obese in 2009?

(1)

..... %

(b) Describe the trend shown in Figure 1 for obesity in men.

(1)

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(c) Give **two** causes of obesity.

(2)

1 .....

2 .....

(Total for Question 2 = 4 marks)

3 (a) Smoking tobacco has many harmful effects.

Complete the sentence by underlining the correct answer in the box.

(1)

Smoking can cause

tinea
malaria
cancer

Some people now use electronic cigarettes (e-cigarettes) instead, as shown in Figure 2.

(Source: © Diego Cervo/Shutterstock)

Figure 2

The vapour they breathe in contains nicotine.

(b) Describe the effect of using e-cigarettes on the heart and circulatory system.

(2)

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(c) No evidence has been found that using e-cigarettes produces carbon monoxide.

Complete the sentence by underlining the correct answer in the box.

(1)

Carbon monoxide reduces the ability of the blood to carry

carbon dioxide
glucose
oxygen

(Total for Question 3 = 4 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

4 Whooping cough is an infection caused by bacteria.

Children can be protected from whooping cough by a vaccine.

(a) Complete the following sentences by underlining the correct answer in each box.

(2)

The vaccine causes the body to produce

white blood cells
cancer cells
red blood cells

These cells can produce

antibodies
pathogens
antibiotics

(b) Complete the sentence by underlining the correct answer in the box.

(1)

Antibiotics should only be used to treat

bacterial infections
viral infections
fungal infections

(Total for Question 4 = 3 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

5 Some plants produce chemicals that kill bacteria.

These chemicals can be tested to see how well they work.

Paper discs are soaked in the chemicals extracted from plants.

The paper discs are put onto agar plates containing a culture of bacteria.

Figure 3 shows the results of a test using extracts from mint and garlic plants.

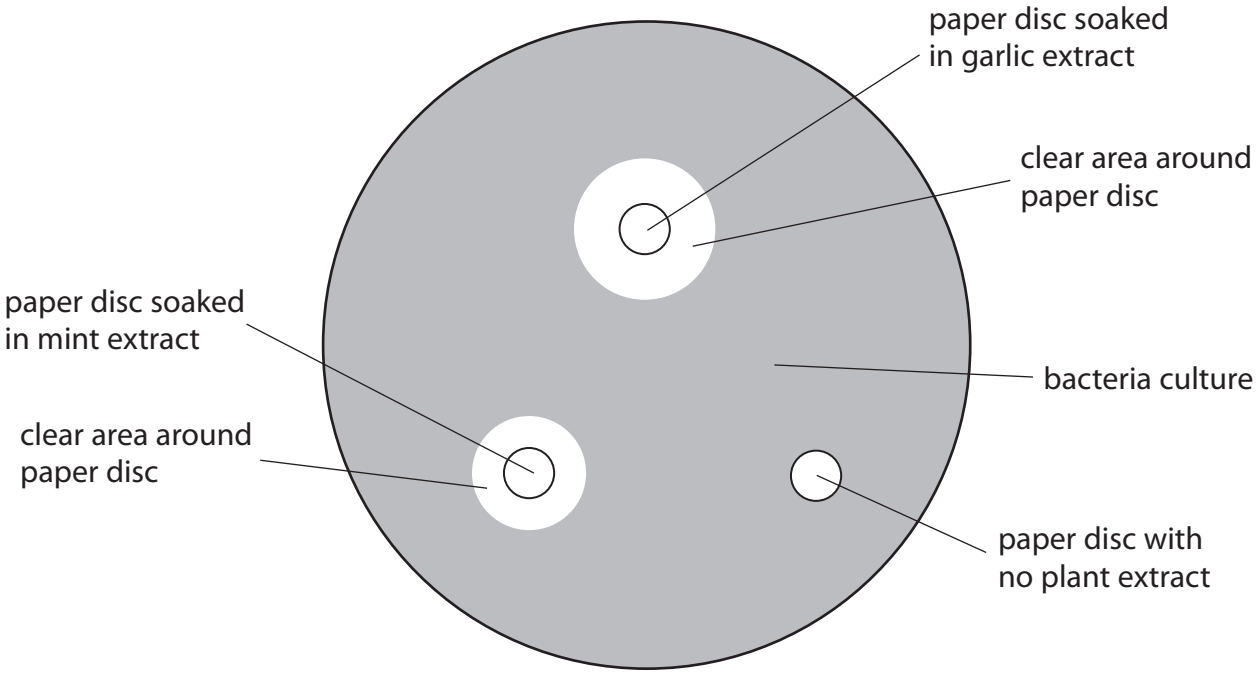


Figure 3

(a) What name is given to the dish used in this experiment?

(1)

..... dish

(b) Which of the plant extracts is best at killing bacteria?

(1)

.....

(c) What name is given to the paper disc with no plant extract?

(1)

.....

(d) How could the experiment be extended to find out more about how effective these plant extracts are at killing bacteria?

(1)

.....

.....

(Total for Question 5 = 4 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

6 Some doctors think that eating too much processed meat may increase the risk of bowel cancer.

(a) Suggest how the risk of bowel cancer may be reduced.

(1)

.....

.....

(b) Cancer cells cause tumours.

How do cancer cells cause tumours?

(1)

.....

.....

(Total for Question 6 = 2 marks)

7 A hospital patient has an infected wound on his leg.

The hospital want to identify the cause of the infection.

A nurse took a swab from the wound and spread it on an agar plate.

A lid was placed on the agar plate and it was kept at 37 °C.

(a) Why was the agar plate kept at 37 °C?

(1)

.....

.....

(b) Give one reason why the swab was spread on agar.

(1)

.....

.....

(c) Why was a lid placed on the agar plate?

(1)

.....

.....

(Total for Question 7 = 3 marks)

TOTAL FOR PAPER = 25 MARKS

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Paper 2 mark scheme

Question number	Answer	Mark
1(a)	fungi	(1)

Question number	Answer	Mark
1(b)	fungi	(1)

Question number	Answer	Mark
1(c)	B	(1)

Question number	Answer	Mark
1(d)	Mosquito	(1)

Question number	Answer	Mark
1(e)	diarrhoea	(1)

Question number	Answer	Mark
2(a)	25%	(1)

Question number	Answer	Mark
2(b)	Increasing	(1)

Question number	Answer	Mark
2(c)	• Too much food/fat/carbohydrate/energy content in food (1) • Lack of exercise (1)	(2)

Question number	Answer	Mark
3(a)	cancer	(1)

Question number	Answer	Mark
3(b)	• Blood vessels narrow/heart rate increases (1) • So blood pressure increases/heart works harder (1)	(2)

Question number	Answer	Mark
3(c)	oxygen	(1)

Question number	Answer	Mark
4(a)	• white blood cells (1) • antibodies (1)	(2)

Question number	Answer	Mark
4(b)	bacterial infections	(1)

Question number	Answer	Mark
5(a)	Petri (dish)	(1)

Question number	Answer	Mark
5(b)	Garlic	(1)

Question number	Answer	Mark
5(c)	Control	(1)

Question number	Answer	Mark
5(d)	Try different concentrations/different bacteria	(1)

Question number	Answer	Mark
6(a)	Eat less processed meat/bacon/sausages/eq.	(1)

Question number	Answer	Mark
6(b)	Uncontrolled cell division	(1)

Question number	Answer	Mark
7(a)	Body temperature/best temperature for growth of micro-organisms	(1)

Question number	Answer	Mark
7(b)	Agar contains nutrients/food source/sugar source for the bacteria/to grow the bacteria	(1)

Question number	Answer	Mark
7(c)	To prevent other micro-organisms settling on the plate/prevent contamination	(1)

Write your name here

Surname	Other names

Pearson Edexcel
Entry Level Certificate

Centre Number | | | | | |

Candidate Number | | | | |

Science

Paper 4: Chemistry 1B – Separating mixtures, breaking down substances, acids and metals

Sample assessment material for first teaching September 2016

For teacher's use only

Total Marks
/25

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- Calculators may be used.

Information

- The total mark for this paper is 25.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

S55218A

1/1/

S 5 5 2 1 8 A 0 1 1 2

Pearson

Answer ALL questions.

1 A student separates a mixture of coloured dyes using the apparatus in Figure 1.

(a) The student adds water to the beaker.

Draw a line to show the correct level of water in the beaker.

(1)

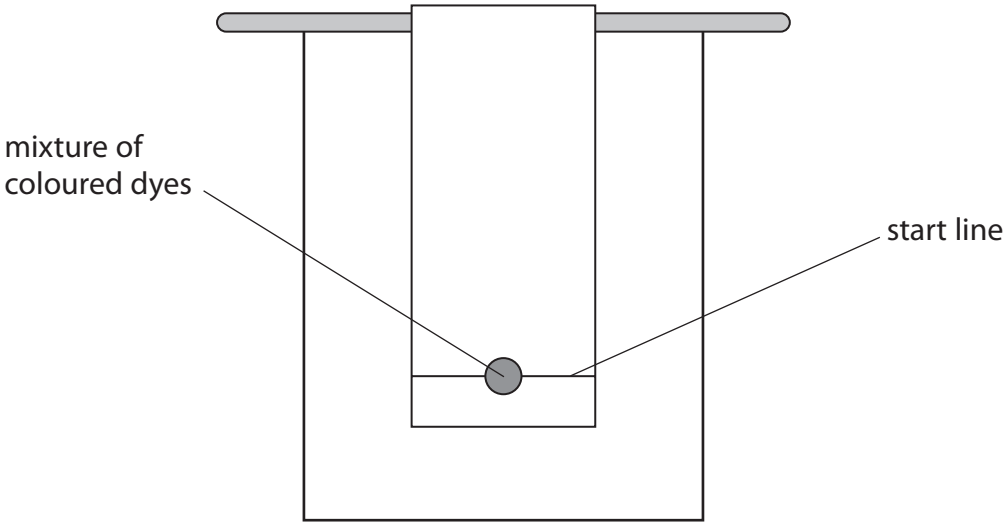


Figure 1

(b) What is the name of this separation technique?

Put a ring around the correct answer.

(1)

chromatography **crystallisation** **distillation**

(c) The results for four mixtures of coloured dyes, **A**, **B**, **C** and **D**, are shown in Figure 2.

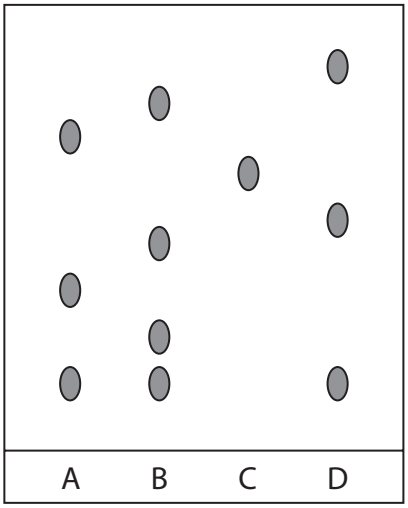


Figure 2

Which mixture contains the greatest number of dyes?

Tick the correct box (☒).

(1)

☐ **A**

☐ **B**

☐ **C**

☐ **D**

(Total for Question 1 = 3 marks)

2 Which of these metals is found in the Earth's crust as an uncombined element?

Tick the correct box (☒).

☒ **A** aluminium

☒ **B** gold

☒ **C** iron

☒ **D** sodium

(Total for Question 2 = 1 mark)

3 Making river water safe to drink involves three processes.

Tick the box that lists the three processes in the correct order (☒).

☒ **A** chlorination → filtration → sedimentation

☒ **B** sedimentation → filtration → chlorination

☒ **C** filtration → chlorination → sedimentation

☒ **D** chlorination → sedimentation → filtration

(Total for Question 3 = 1 mark)

4 Here are some chemical terms and definitions.

Draw one line from each term to its correct definition.

term	definition
electrolyte	contains two or more substances that are not chemically combined
mixture	source of metals extracted from the Earth's crust
ore	solution or molten solid that is decomposed by electricity
	substance that reacts with an alkali to produce electricity

(Total for Question 4 = 3 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

5 Copper carbonate is insoluble.

A student reacts excess copper carbonate with dilute nitric acid to form a salt.

(a) Complete the following statements by underlining the correct word in each box.

(2)

When copper carbonate is added to dilute nitric acid the salt formed

is

copper chloride
copper nitrate
copper sulfate

.

The reaction between copper carbonate and dilute nitric acid is an

example of

distillation
electrolysis
neutralisation

.

(b) Dilute nitric acid has a pH of 1.

The student adds universal indicator solution to some dilute nitric acid.

What colour will it turn?

(1)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(c) During this reaction, carbon dioxide is given off.

At the end of the reaction, the unreacted copper carbonate is separated from the salt solution.

Complete the following statements by underlining the correct word in each box.

(2)

The formula of copper carbonate is

CuCO
$CuCO_2$
$CuCO_3$

.

The method used to remove the unreacted copper carbonate

from the salt solution is

filtration
simple distillation
fractional distillation

.

(d) Describe the chemical test for carbon dioxide and the result of the test.

(2)

Test.....

.....

Result.....

.....

(Total for Question 5 = 7 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

6 Iron ore contains iron oxide.

Iron oxide is converted into iron by heating the ore with carbon.

(a) Complete the word equation for the reaction that takes place.

(1)

iron oxide + carbon → iron + ...

Figure 3 shows the price of iron ore per tonne over recent years.

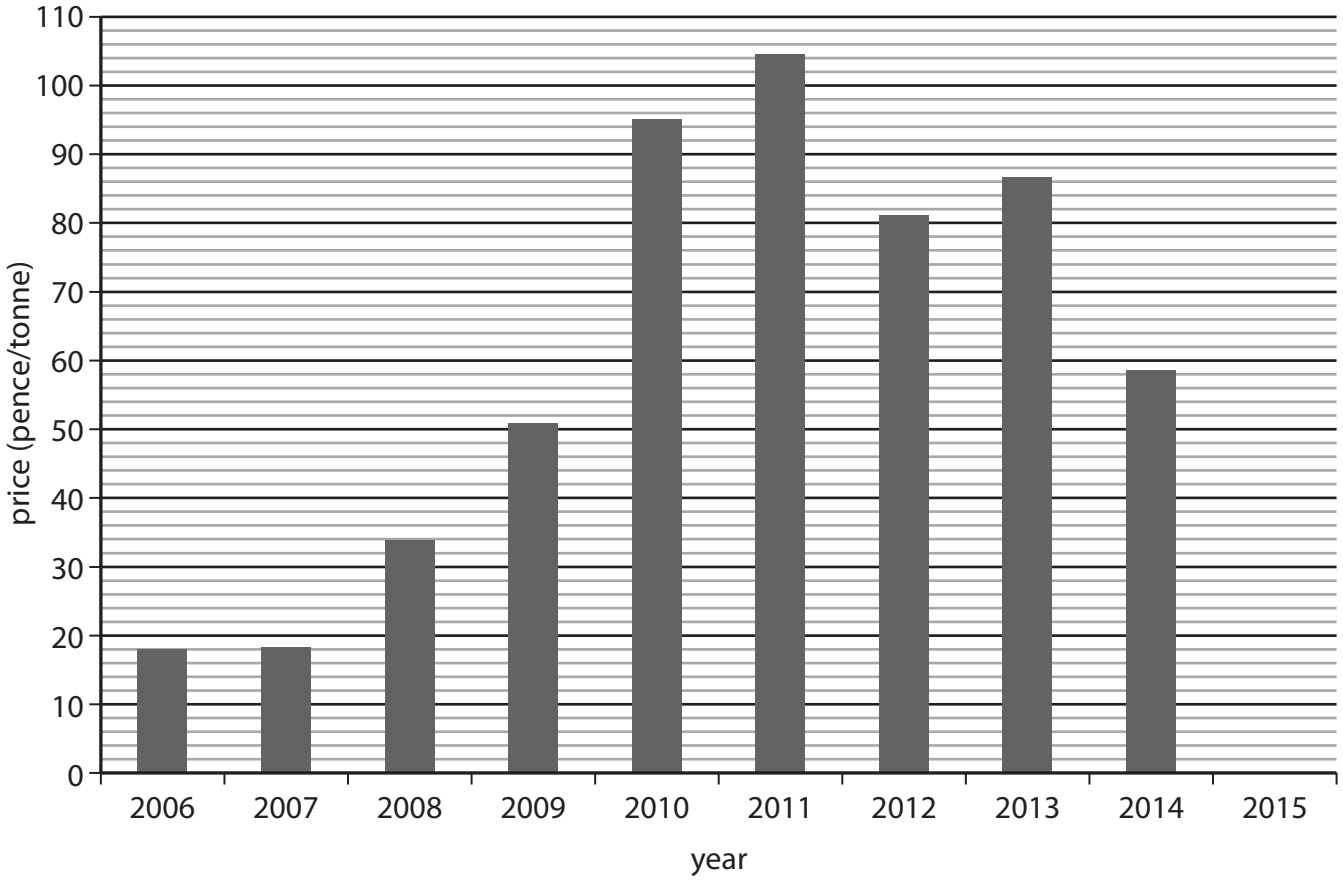


Figure 3

(b) In 2015, the price of iron ore was 36p per tonne.

Complete the bar chart by adding the bar for 2015.

(1)

(c) Describe what the bar chart shows about the price of iron ore between 2006 and 2011.

(2)

.....

.....

.....

.....

(d) Over a third of the world's iron is made from recycled or scrap iron.

Give **one** advantage of making iron from recycled or scrap iron.

(1)

.....

.....

(e) Jewellery is often made from gold.

Give **one** reason why iron is not often used to make jewellery.

(1)

.....

.....

(Total for Question 6 = 6 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

7 Sodium chloride is soluble in water.

Complete the following sentence by underlining the correct answer in the box.

Sodium chloride can be separated from its solution by

crystallisation
filtration
fractional distillation

.

(Total for Question 7 = 1 mark)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

8 Figure 4 shows the apparatus used to pass an electric current through a solution of copper chloride.

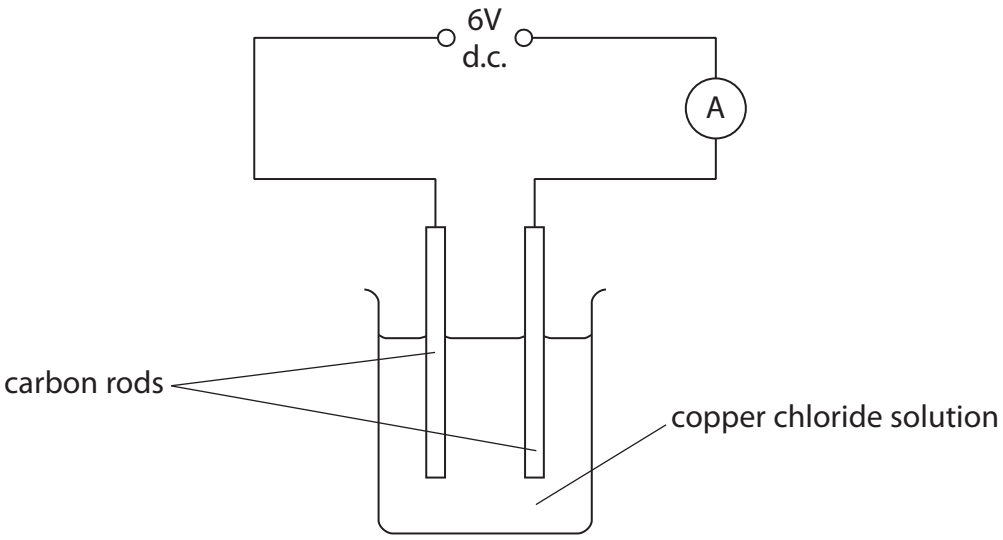


Figure 4

(a) When the current is switched on, one of the products is copper.

What is the name of the other product?

(1)

.....

(b) What name is given to the process taking place?

(1)

.....

(c) A current is passed through molten solid X.

The two products are lead and bromine.

What is the name of solid X?

(1)

.....

(Total for Question 8 = 3 marks)

TOTAL FOR PAPER = 25 MARKS

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Paper 4 mark scheme

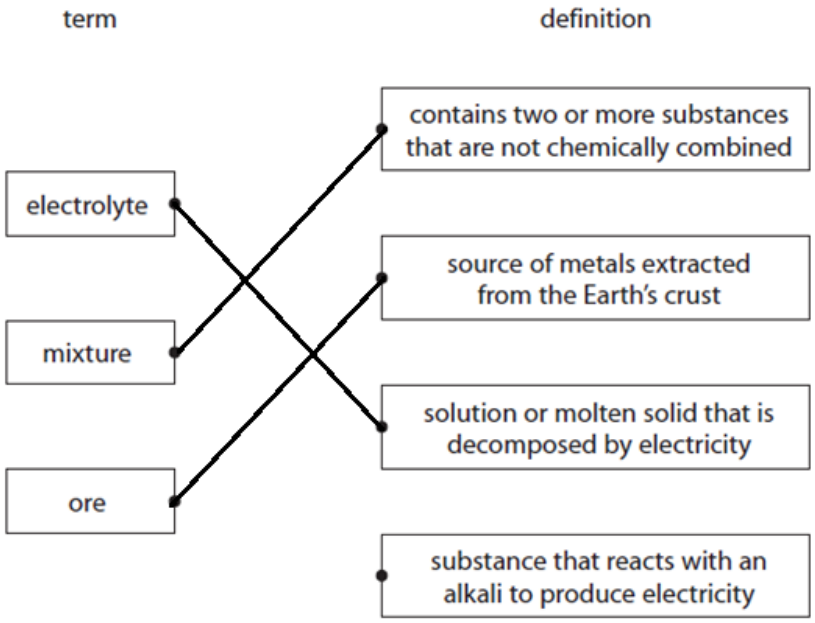
Question number	Answer	Mark
1(a)	A horizontal line drawn above the bottom edge of the chromatography paper **and** below the dot representing the mixture of coloured dyes	**(1)**

Question number	Answer	Mark
1(b)	chromatography	**(1)**

Question number	Answer	Mark
1(c)	B	**(1)**

Question number	Answer	Mark
2	B	**(1)**

Question number	Answer	Mark
3	B	**(1)**

Question number	Answer	Mark
4	 2 marks for two lines correct 1 mark for one line correct	(3)

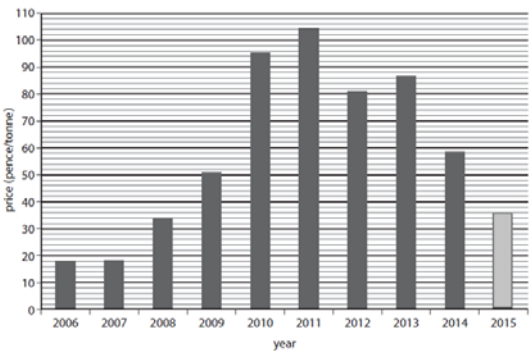
Question number	Answer	Mark
5(a)	• copper nitrate (1) • neutralisation (1)	(2)

Question number	Answer	Mark
5(b)	Red	(1)

Question number	Answer	Mark
5(c)	• $CuCO_3$ (1) • filtration (1)	(2)

Question number	Answer	Mark
5(d)	*Test* {Bubble/pass the gas through/shake the gas with/add to} limewater (1) *Result* (The limewater/it) will turn milky/white/cloudy (1)	(2)

Question number	Answer	Additional guidance	Mark
6(a)	iron oxide + carbon → iron + carbon dioxide (1)	Accept carbon oxide/carbon monoxide	**(1)**

Question number	Answer	Additional guidance	Mark
6(b)		Bar should be in the centre of the space for 2015/fill central half of 2015 Drawn to 36p, accurate to ±2p Ignore shading	**(1)**

Question number	Answer	Additional guidance	Mark
6(c)	(it) rose/went up (1) by 86p (per tonne) (1)	Accept from 18p to £1.04/104p (per tonne) (1) Allow ±2 on individual values, ±4 on overall value Allow increases by 5 to 6 times	**(2)**

Question number	Answer	Mark
6(d)	Cheaper/conserves energy/conserves raw materials/lowers production of carbon dioxide/removes scrap from the environment	**(1)**

Question number	Answer	Additional guidance	Mark
6(e)	Corrodes/rusts/less easy to work	Accept less attractive	**(1)**

Question number	Answer	Mark
7	crystallisation	**(1)**

Question number	Answer	Additional guidance	Mark
8(a)	Chlorine	Do not accept chloride	**(1)**

Question number	Answer	Mark
8(b)	Electrolysis	**(1)**

Question number	Answer	Additional guidance	Mark
8(c)	Lead bromide	Do not accept lead bromine	**(1)**

Write your name here

Surname	Other names

Pearson Edexcel
Entry Level Certificate

Centre Number | | | | | |

Candidate Number | | | | |

Science

Paper 6: Physics 1B – Waves and radiation

Sample assessment material for first teaching September 2016

For teacher's use only

Total Marks

/25

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- Calculators may be used.

Information

- The total mark for this paper is 25.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

S55219A

1/1/

S 5 5 2 1 9 A 0 1 1 2

Pearson

Answer ALL questions.

1 Figure 1 shows a wave.

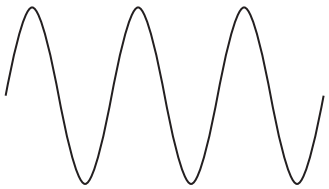


Figure 1

Draw one line from each wave property to its description.

wave property	description
frequency	the distance between two tops of the wave
wavelength	the number of waves passing every second
amplitude	the height of a wave from top to bottom

(Total for Question 1 = 2 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

2 Figure 2 shows the different waves in the electromagnetic spectrum.

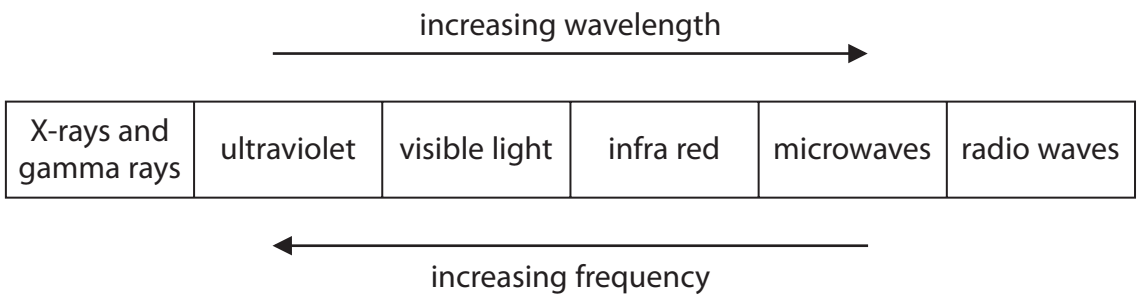


Figure 2

(a) Complete this sentence.

(1)

As the wavelength of the waves increases,

their frequency .....

(b) Give one use of each of these waves.

(2)

Microwaves .....

.....

Radio waves .....

.....

(c) A student wants to find out if a light bulb gives out infrared radiation.

Which of these pieces of equipment does he need?

Put **one** tick in the correct box.

(1)

equipment	needed
ruler	
voltmeter	
blackened thermometer	
Geiger counter	
Bunsen burner	

(d) Doctors don't use x-rays to scan an unborn baby.

Which of these is a reason for this?

Tick the correct box (☒).

(1)

☒ **A** x-rays only show broken bones

☒ **B** x-rays would pass straight through the baby

☒ **C** x-rays can harm the cells of the baby

☒ **D** x-rays would show the mother's bones

(e) Which one of these waves can cause burns to the skin?

Tick the correct box (☒).

(1)

☒ **A** radio waves

☒ **B** microwaves

☒ **C** infrared

☒ **D** visible light

(Total for Question 2 = 6 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

3 Figure 3 represents an atom of carbon-14.

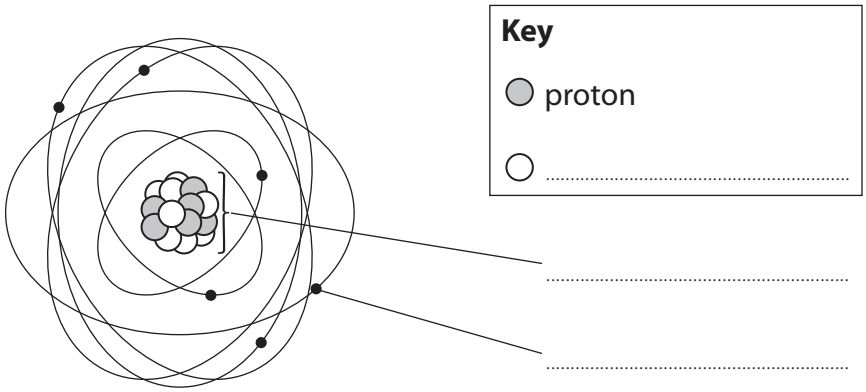


Figure 3

(a) Use words from the box to label Figure 3.

(3)

cell	centre	electron	molecule	neutron	nucleus

(b) What is the **sign** of the charge on a proton?

(1)

.....

(c) Carbon-14 atoms have an atomic number of 6.

How many protons are there in an atom of carbon-14?

(1)

.....

(Total for Question 3 = 5 marks)

4 An atom emits an alpha particle when it decays.

(a) Which part of the atom emits an alpha particle?

(1)

.....

.....

(b) What happens to the atom when an alpha particle is emitted?

Tick the correct box (☒).

(1)

☒ **A** the atom stays the same mass

☒ **B** the atom becomes a new element

☒ **C** the atom increases its mass

☒ **D** the atom stays the same element

(c) An alpha particle is a type of radioactivity.

Give the name of another type of radioactivity.

(1)

.....

.....

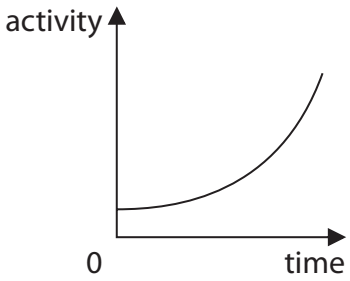
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

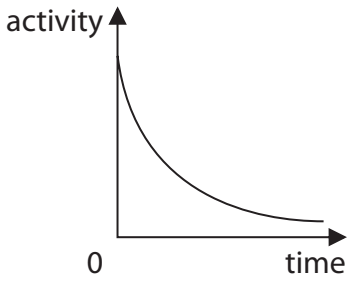
DO NOT WRITE IN THIS AREA

(d) Which of these graphs shows how the activity of a radioactive source changes with time?

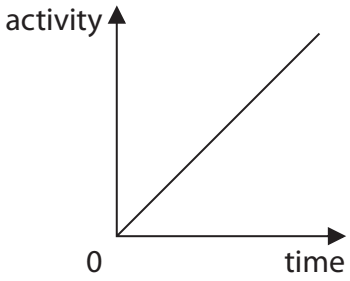
(1)



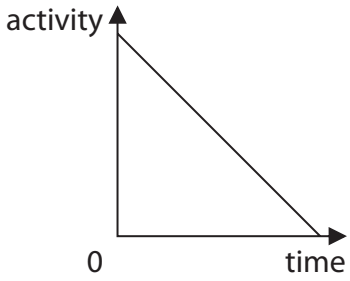
☒ **A**



☒ **B**



☒ **C**



☒ **D**

(e) A doctor uses a radioactive source in a hospital.

State **one** effect the radioactive source can have on cells in the doctor's body.

(1)

.....

.....

(f) Describe **two** ways the doctor can reduce her exposure to the radioactive source.

(2)

1 .....

.....

2 .....

.....

(Total for Question 4 = 7 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

5 A sound wave has a wavelength of 7 metres.

It has a frequency of 48 hertz.

Calculate the speed of the sound wave.

Use the equation:

speed = frequency × wavelength

speed = ... metres per second

(Total for Question 5 = 2 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

6 A teacher investigates how far alpha radiation travels in air.

Figure 4 shows the equipment used.

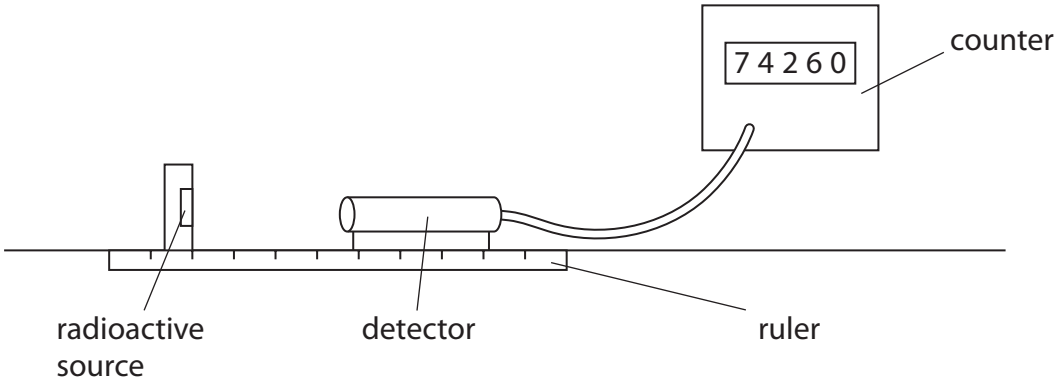


Figure 4

Figure 5 shows the teacher's results.

test number	distance between the detector and the source in centimetres	how long the count was taken for in seconds	the number of counts
1	6	10	74 260
2	7	10	66 915
3	8	10	24 066
4	9	10	8
5	10	20	14
6	11	10	8

Figure 5

Use the results in Figure 5 to answer these questions.

(a) The students tell the teacher that test 5 is not a fair test.

Give one reason why test 5 is not a fair test.

(1)

.....

.....

(b) How far can alpha particles travel in air?

(1)

.....

(c) How can the teacher improve the quality of the results?

(1)

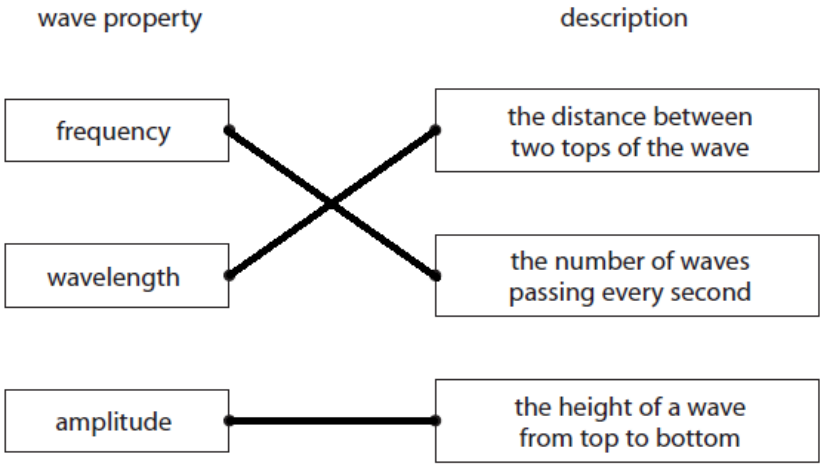
.....

.....

(Total for Question 6 = 3 marks)

TOTAL FOR PAPER = 25 MARKS

Paper 6 mark scheme

Question number	Answer	Mark
1	 2 marks for all three lines correct 1 mark for any one line correct	(2)

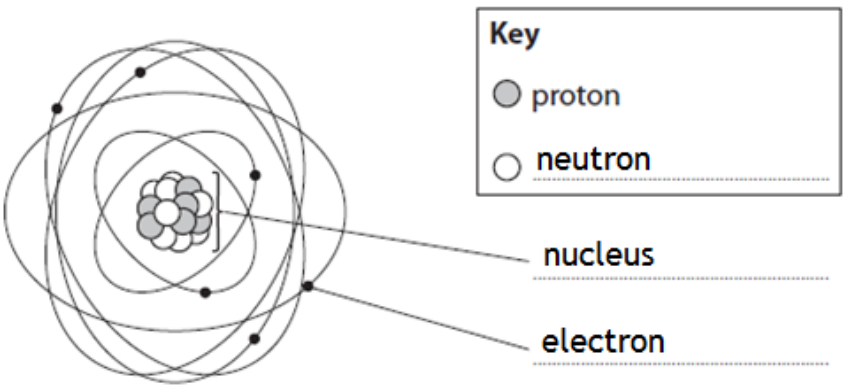
Question number	Answer	Mark
2(a)	decreases/eq.	(1)

Question number	Answer	Mark
2(b)	Any sensible use for each radiation Microwaves Cooking/heating water/mobile phones/communication/TV remote (1) Radio waves Communication/radio stations (1)	(2)

Question number	Answer	Mark
2(c)	<table><tr><th>Equipment</th><th>Needed</th></tr><tr><td>ruler</td><td></td></tr><tr><td>voltmeter</td><td></td></tr><tr><td>blackened thermometer</td><td>✓</td></tr><tr><td>Geiger counter</td><td></td></tr><tr><td>Bunsen burner</td><td></td></tr></table>	(1)

Question number	Answer	Mark
2(d)	C	(1)

Question number	Answer	Mark
2(e)	C	(1)

Question number	Answer	Mark
3(a)	1 mark for each correct label in this order: neutron (1) nucleus (1) electron (1)  	(3)

Question number	Answer	Mark
3(b)	(one) positive/+/plus	(1)

Question number	Answer	Mark
3(c)	6	(1)

Question number	Answer	Mark
4(a)	Nucleus	(1)

Question number	Answer	Mark
4(b)	B	**(1)**

Question number	Answer	Mark
4(c)	Gamma/beta	**(1)**

Question number	Answer	Mark
4(d)	B	**(1)**

Question number	Answer	Mark
4(e)	Kill cells/destroy cells/cause cancer/cause mutations	**(1)**

Question number	Answer	Mark
4(f)	Any two from: • wear gloves, i.e. no direct contact/eq. (1) • stay on the opposite side of the room, i.e. keep the distance as long as possible/eq. (1) • stand behind lead wall or use a lead apron, i.e. use shielding/eq. (1) • only use the source for a limited time/eq. (1)	**(2)**

Question number	Answer	Mark
5	Substitution (1) speed = 48 × 7 Answer (1) 336 (metres per second) A correct answer without working gains both marks	**(2)**

Question number	Answer	Mark
6(a)	It was timed for 20 seconds/a different time to the other tests	**(1)**

Question number	Answer	Mark
6(b)	8 (to) 9 (centimetres)	**(1)**

Question number	Answer	Mark
6(c)	Any sensible suggestion (1) e.g. do more distances (e.g. half centimetres)/repeat readings	**(1)**

edexcel

For information about Edexcel, BTEC or LCCI qualifications
visit qualifications.pearson.com

Pearson Education Limited. Registered in England and Wales No. 872828
Registered Office: 80 Strand, London WC2R 0RL
VAT Reg No GB 278 537121

ISBN 978-1-4469-3974-1