



General Certificate of Secondary Education
2015–2016

Centre Number

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Candidate Number

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Science: Single Award

Unit 1 (Biology)
Foundation Tier



[GSS11]

TUESDAY 17 MAY 2016, AFTERNOON

TIME

1 hour, plus your additional time allowance.

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 blue or black ink only.

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.

Quality of written communication will be assessed in Question **9**.

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- 1 (a) The table below shows some food types and their functions. Complete the table.

Choose from:

iron : growth and repair : calcium

carbohydrate : prevents constipation

Food type	Function in the body
	gives us energy
protein	
	for strong teeth and bones

[3]

- (b) Given below are two eating disorders and three descriptions. Using lines, link each disorder with the correct description.

Eating disorder

Description

anorexia

eat so much they become obese

bulimia

binge eat then make themselves vomit

eat very little and lose weight

[2]

[Turn over

- 2 (a) The photograph below shows some bean plants growing in a pot.



Source: Chief Examiner

Complete the sentences below.

Choose from:

respiration water phototropism light heat

The plants are bending towards the _____.

This process in plants is called _____ [2]

- (b) Photosynthesis is another process in plants.

- (i) Complete the equation for photosynthesis.

water + _____ → starch + _____ [2]

(ii) The list below gives the steps for testing for starch in a leaf, but they are **not** in the correct order.

- A Put the green leaf into boiling ethanol (alcohol)
- B Add iodine to the leaf
- C Remove a leaf from the plant and put it in boiling water for 30 seconds
- D Spread the leaf on a white tile
- E Dip the leaf in boiling water to soften it

Put the steps **A**, **B**, **C**, **D** and **E** in the correct order.
The first one has been done for you.

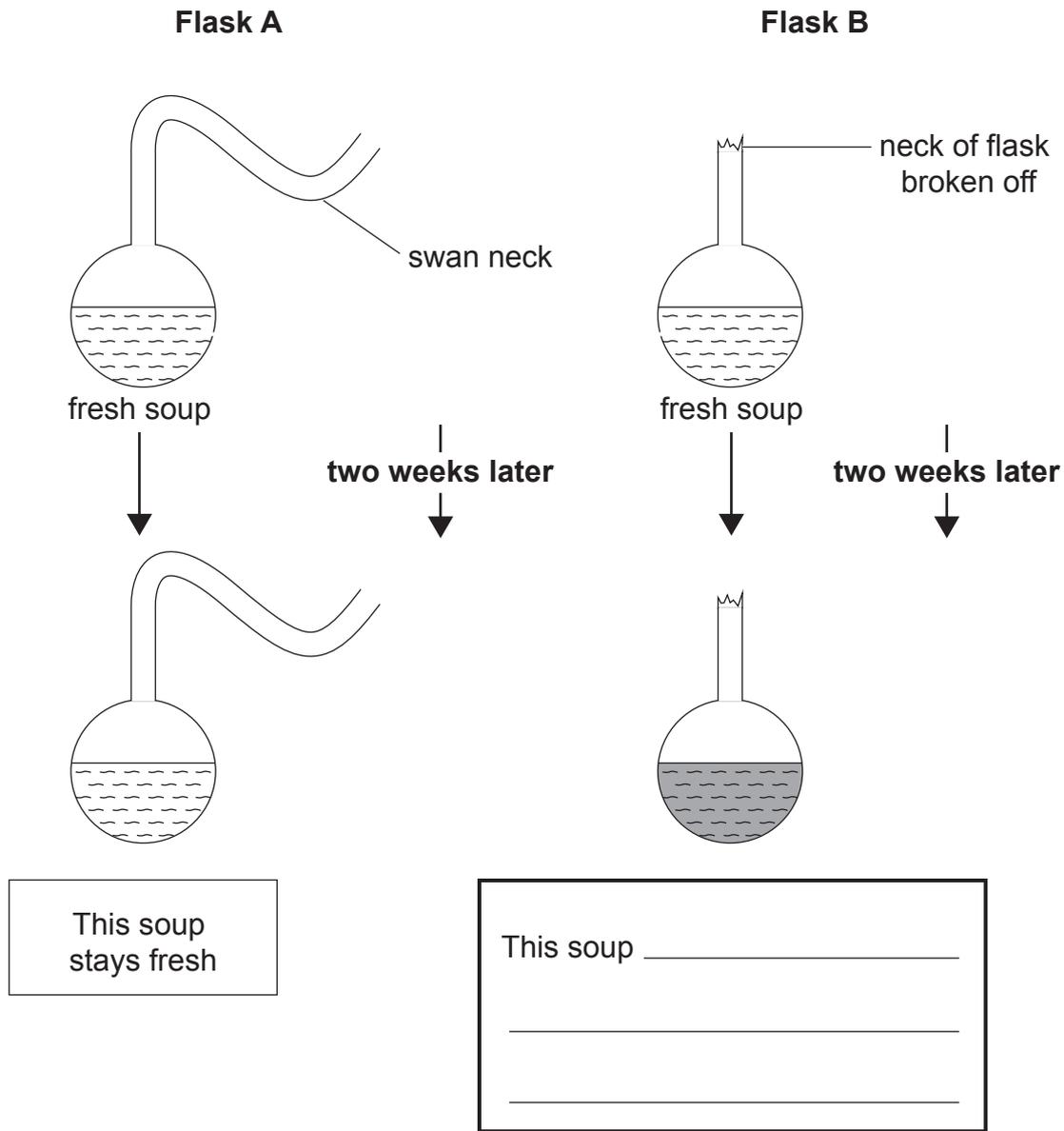
 C → _____ → _____ → _____ → _____ [2]

(iii) Explain fully why the green leaf is boiled in ethanol.

_____ [2]

[Turn over

3 (a) The diagram below shows an experiment to find if microorganisms are the cause of food contamination.



Source: CCEA

(i) Complete the box in the diagram above to describe what happens to the soup in flask B. [1]

(ii) Explain the result for flask A.

[2]

(iii) Name the scientist who carried out a similar experiment.

[1]

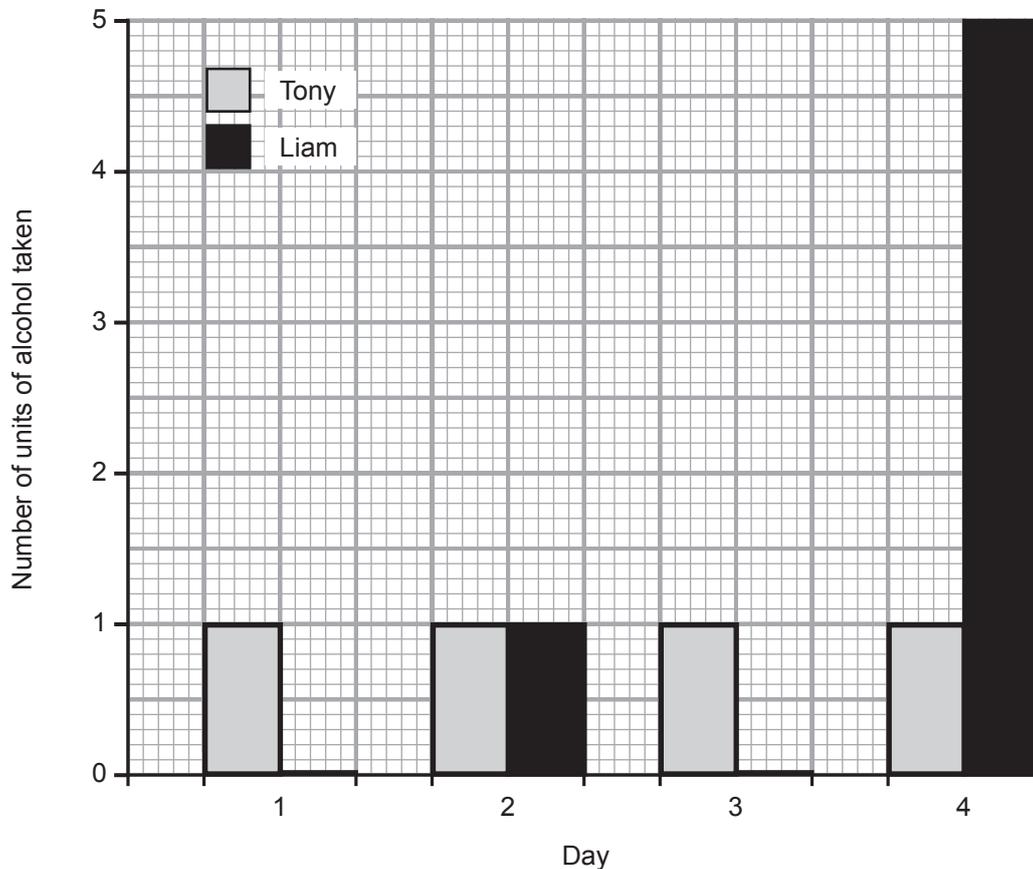
(b) Our bodies have many natural defences against disease. Describe how mucous membranes in our noses help protect against disease.

[2]

[Turn over

4 Many people drink more than the recommended amount of alcohol.

(a) The number of units of alcohol drunk by two 20-year-old men was recorded over a four day period. The results are shown in the graph below.



(i) Calculate how many units of alcohol Tony drank over the four days.

_____ units [1]

(ii) Explain why Liam can be described as a 'binge drinker'.

 _____ [1]

(b) Describe one way excess drinking of alcohol can harm **society**.

[1]

(c) Apart from stopping drinking alcohol completely, suggest **two** ways someone could reduce his or her alcohol intake.

1. _____

2. _____ [2]

[Turn over

- 5 The table below shows the numbers of patients being diagnosed with Type 1 and Type 2 diabetes over a twenty year period.

Year	Number of patients diagnosed with diabetes	
	Type 1	Type 2
1996 – 2000	9	87
2001 – 2005	12	100
2006 – 2010	18	125
2011 – 2015	26	161

- (a) The number of patients diagnosed with Type 1 diabetes is increasing over time. Give **two** other trends shown by this information.

1. _____

2. _____
 _____ [2]

- (b) Give **one** difference between Type 1 diabetes and Type 2 diabetes, other than the number of patients.

 _____ [1]

- (c) Give **one** long term effect (complication) of diabetes.

_____ [1]



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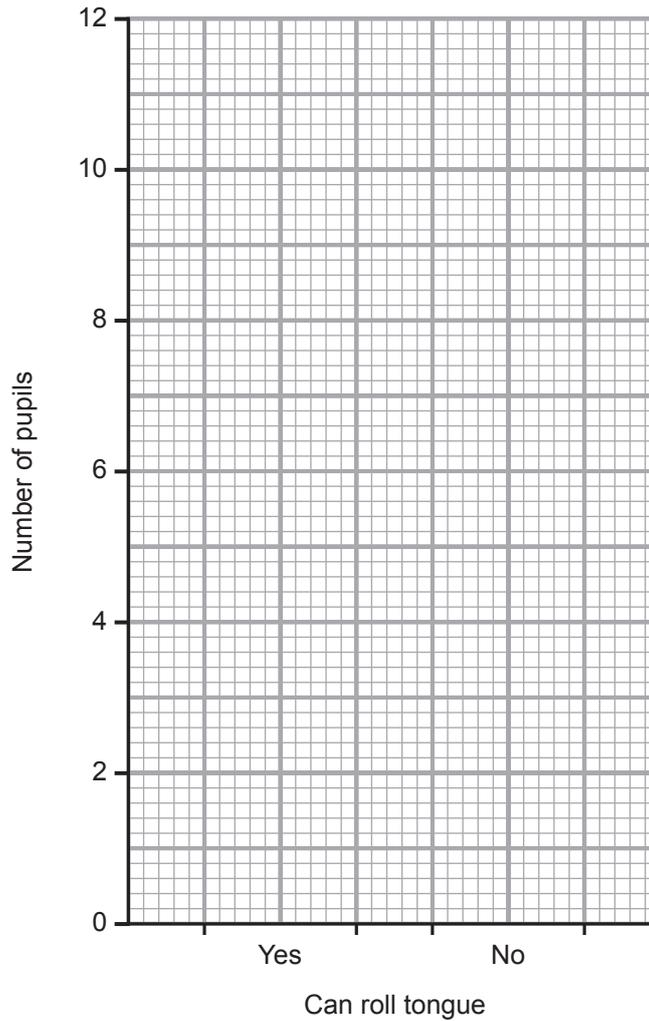
[Turn over

6 (a) People either can or cannot roll their tongue.

(i) Name the type of variation shown by tongue rolling.

[1]

(ii) In a class of 20 pupils only 11 can roll their tongue. Using this information, complete the bar chart below.



[2]

- (b) Differences between people are mainly due to differences in their genes.

For example, the condition cystic fibrosis is a genetic condition. The normal allele (**F**) is dominant to the allele that causes cystic fibrosis (**f**).

- (i) Complete the Punnett square to show how a father with the genotype (**Ff**) and a mother with the genotype (**ff**) can have children with cystic fibrosis.

		father	
		F	
mother			
	f		ff

[2]

- (ii) Circle the genotype(s) in the Punnett square that show offspring with cystic fibrosis.

[1]

[Turn over

7 Rhododendron is an example of a competitive invasive species in Northern Ireland.

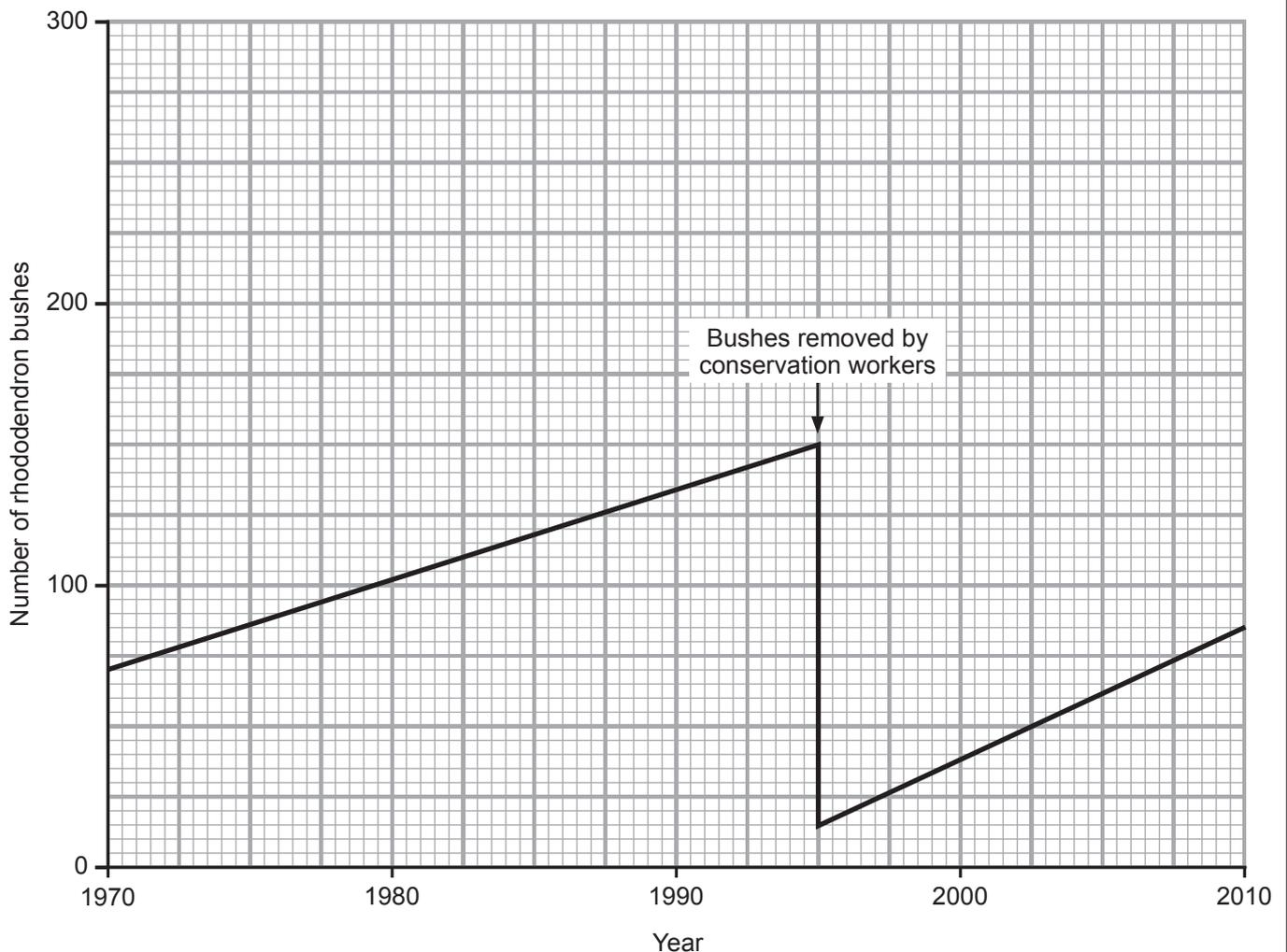
(a) Give **two** features that 'competitive invasive species' have in common.

1. _____

2. _____

_____ [2]

(b) The graph below shows how the number of rhododendron bushes in an area of heathland has changed over a 40 year period.



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(i) Calculate how many rhododendron bushes were removed in 1995.

Show your working out.

_____ [2]

(ii) Calculate the percentage of bushes that were not removed in 1995.

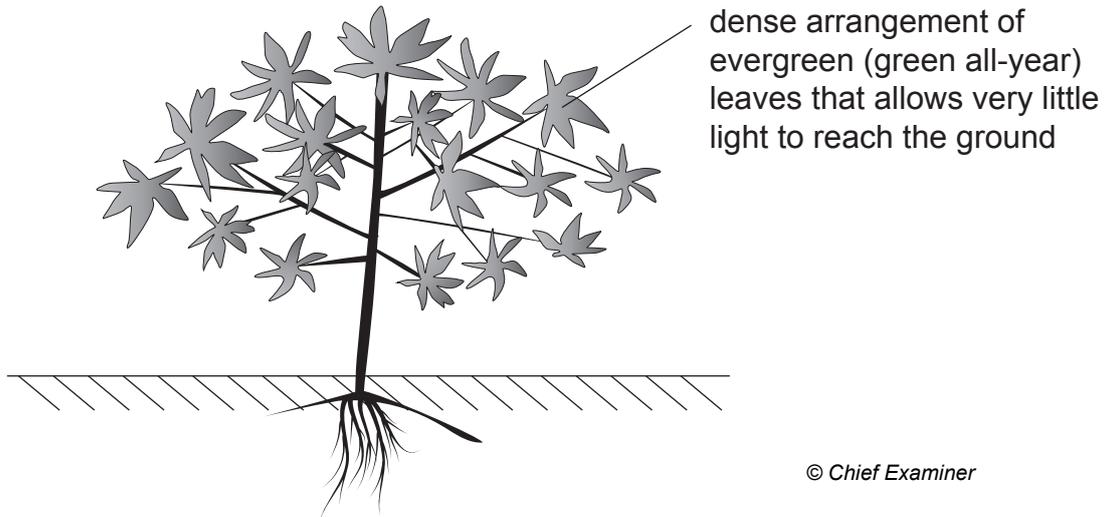
_____ % [1]

(iii) Predict how many rhododendron bushes there would have been in 2010 if no bushes had been removed.

_____ [1]

[Turn over

(c) The drawing below represents a rhododendron bush.



Using the information provided and your knowledge, answer the following questions.

(i) Suggest the effect a rhododendron bush has on other species of plants growing close to it. Explain your answer.

[3]

(ii) Suggest the effect on biodiversity, if any, the removal of rhododendron bushes will have in the heathland.

[1]

(d) Name **one** other competitive invasive species.

[1]

8 (a) There are many different strains (types) of virus that cause flu. Flu viruses **mutate** easily making many new virus strains (types) that cause flu.

(i) Explain the term **mutation**.

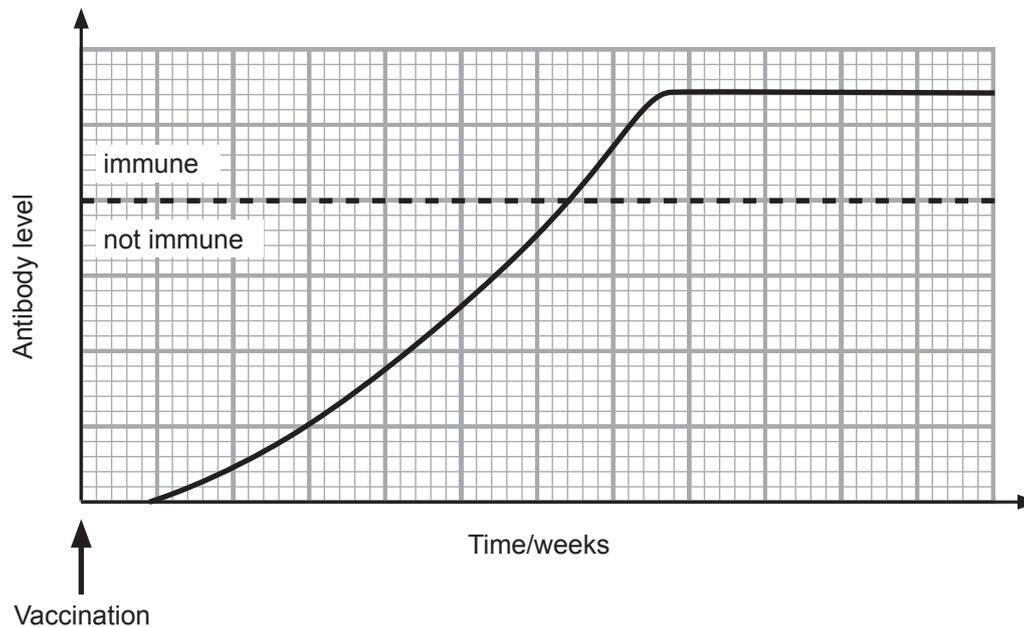
[2]

Many people in the UK get a flu vaccination each year.

(ii) Describe fully what a flu vaccination contains.

[2]

The graph below shows the effect of a flu vaccination on a person's antibody level.



When developing the flu vaccination in any particular year, scientists have to predict (guess) which strain of virus is likely to infect the most people. They then develop the flu vaccination against this particular strain.

Using the information provided, answer the questions below.

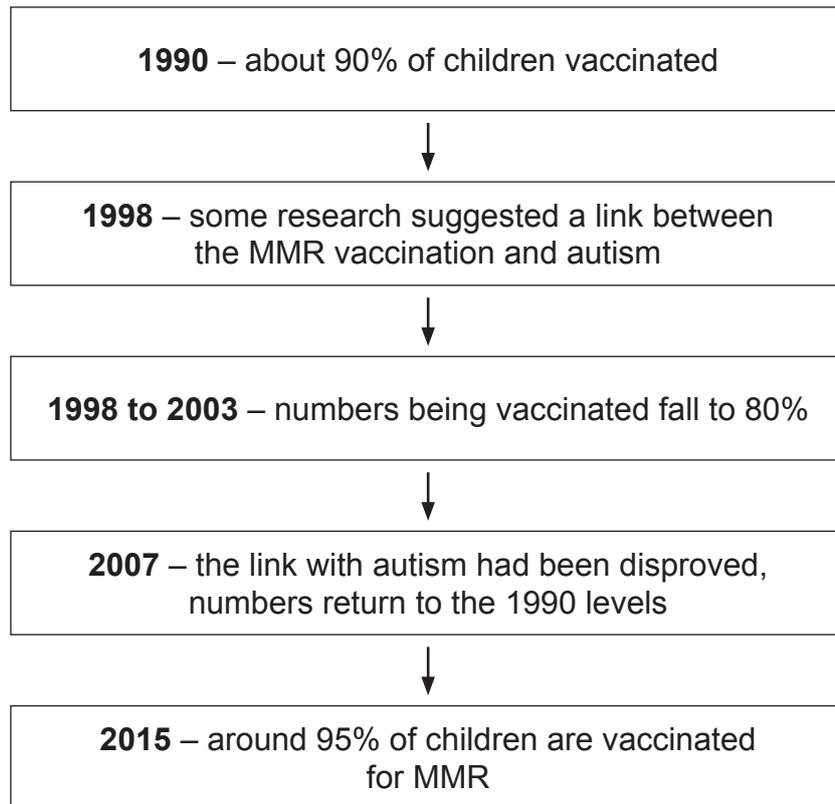
- (iii) Use the graph to suggest why people get the flu vaccination many weeks before they are expected to be infected by the flu virus.

_____ [1]

- (iv) Suggest why some people who get the flu vaccination might get flu many months later.

_____ [1]

- (b) The flow chart below summarises how the number of children being vaccinated for MMR has changed since 1990.



- (i) Describe fully the trend in the number of children being vaccinated for MMR between **2003 and 2015**. Use data from the flow chart to support your answer.

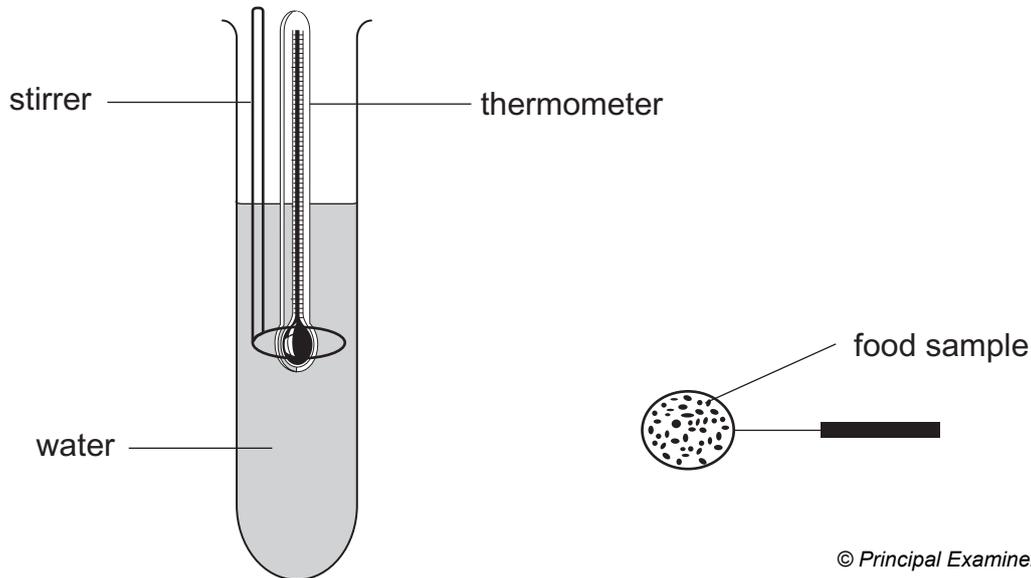
[2]

- (ii) Suggest why there are still some parents who do not have their children vaccinated for MMR.

[1]

[Turn over

- 9 Energy released from different foods can be compared using the apparatus shown in the diagram.



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Describe how you would compare the amount of energy released from a biscuit to the amount of energy released from bread, using the apparatus above.

Your answer should include:

- **two** variables to be controlled to make the investigation fair
- **one** reason why the results obtained are likely to be less than the actual amount of energy in the foods

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

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For Examiner's use only	
Question Number	Marks
1	
2	
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9	

Total Marks	
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Examiner Number

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