



Rewarding Learning

General Certificate of Secondary Education
2019–2020

Centre Number

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Candidate Number

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Single Award Science: Biology

Unit 1

Foundation Tier



[GSA11]

GSA11

WEDNESDAY 26 FEBRUARY 2020, 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 only. **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.

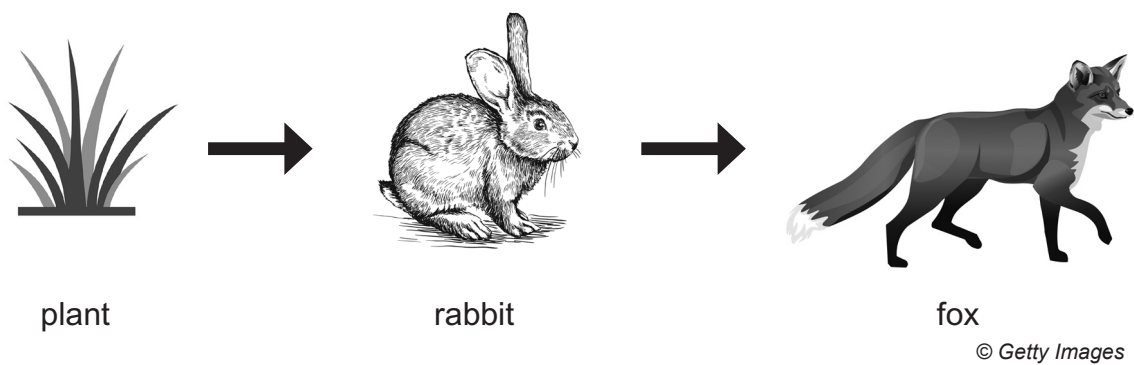
Quality of written communication will be assessed in Question **8(c)**.

12682.04R



20GSA1101

- 1 (a) Shown below is a simple grassland food chain.



- (i) What term is used to describe the **plant** in this food chain?

Circle the correct answer.

primary consumer : secondary consumer : producer

[1]

- (ii) What is the original source of energy for all food chains?

[1]

- (iii) Complete the following sentence.

This is one of the food chains found in the grassland, there are many more that are interlinked to form a food _____.

[1]



- (b) A survey was carried out and the number of rabbits in this grassland was counted in May every year for three years. The results are shown below.

Year	1	2	3
Number of rabbits	510	255	175

- (i) Describe the change in the number of rabbits over the three year period.

_____ [1]

- (ii) Suggest what might have happened to the number of foxes over the three year period to cause the change in the number of rabbits.

_____ [1]

- (iii) State **one** thing that was done in this survey to make sure these results were valid (fair test).

_____ [1]

[Turn over



- 2 (a) The table below shows some food types and their function.

Complete the table.

Choose from:

iron : calcium : growth and repair : healthy bones and teeth

Food type	Function
fat	source of energy
	helps red blood cells carry oxygen
protein	

[2]

- (b) A sample of food changed Biuret reagent from blue to lilac/purple.
What food type was present in this food sample?

Circle your answer.

sugar starch protein

[1]

- (c) Obesity is the cause of many health problems in Northern Ireland.

- (i) Apart from Type 2 diabetes, give **one** other health problem linked to obesity.

_____ [1]

- (ii) The risk of obesity can be reduced by making changes to diet and lifestyle.
Give **one** example of each type of change.

Diet _____

Lifestyle _____ [2]



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(Questions continue overleaf)

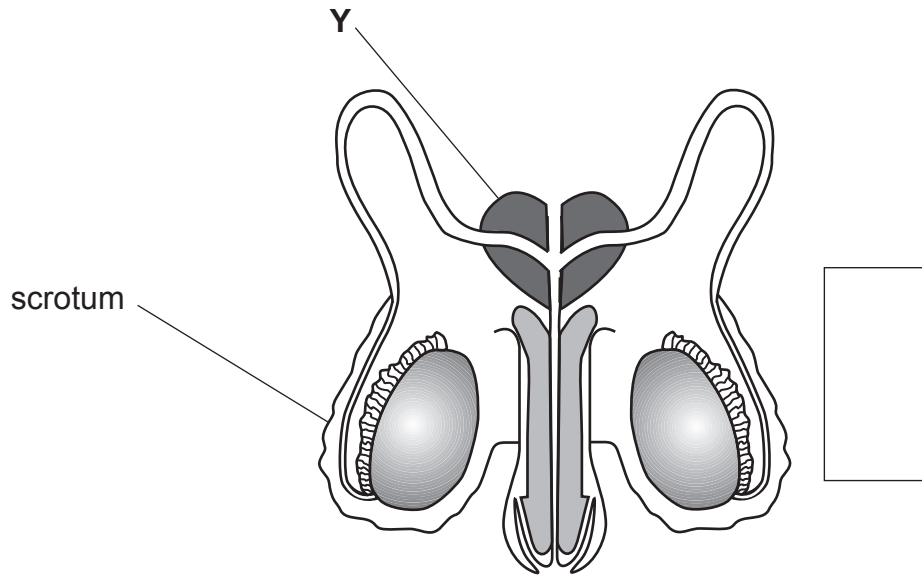
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[Turn over



20GSA1105

3 (a) The diagram below shows the male reproductive system.



Source: Principal Examiner

(i) Name the part labelled Y on the diagram above.

Choose from:

prostate gland : urethra : sperm tube

_____ [1]

(ii) What is the function of the scrotum?

_____ [1]

(iii) On the diagram above draw an arrow in the box to show the direction sperm travels as it leaves the testes. [1]



- (b) (i) A vasectomy is a surgical method of contraception for males. Describe what is done during a vasectomy and explain how this prevents pregnancy.

[2]

- (ii) Name **one** other method of contraception that could be used by a male.

[1]

[Turn over

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20GSA1107

- 4 (a) Cigarette smoke contains many substances, such as tar, which can seriously damage health.

(i) Name **one** disease caused by tar.

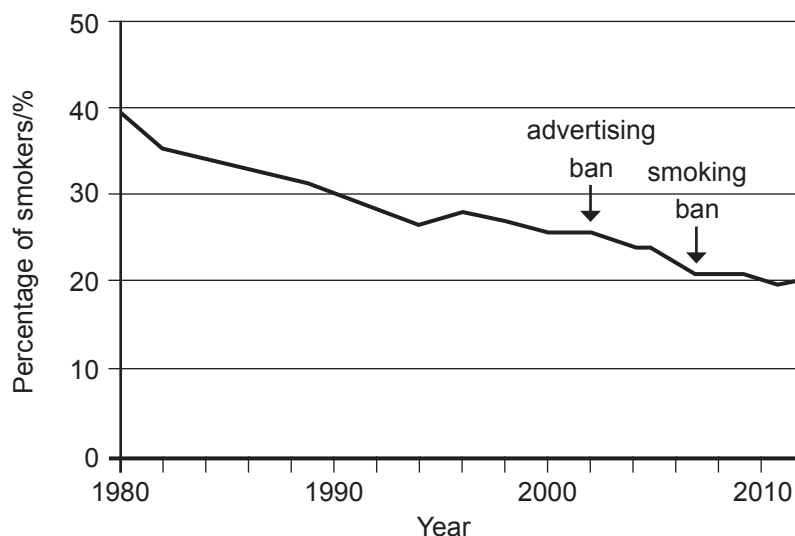
_____ [1]

(ii) Complete the sentences below to name and describe one other harmful substance found in cigarette smoke.

Cigarette smoke contains a substance which makes it difficult to give up smoking. This substance is called _____ and is described as an _____ substance. [2]



- (b) The graph below shows the percentage of smokers in the UK between 1980 and 2010. A ban on advertising cigarettes was introduced in 2002 and a ban on smoking in the workplace was introduced in 2007.



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- (i) Describe the trend shown by this information.

[1]

- (ii) It has been suggested that the cigarette advertising ban was more effective than the smoking ban in reducing the percentage of smokers in the UK. What evidence from the graph supports this statement?

[1]

[Turn over



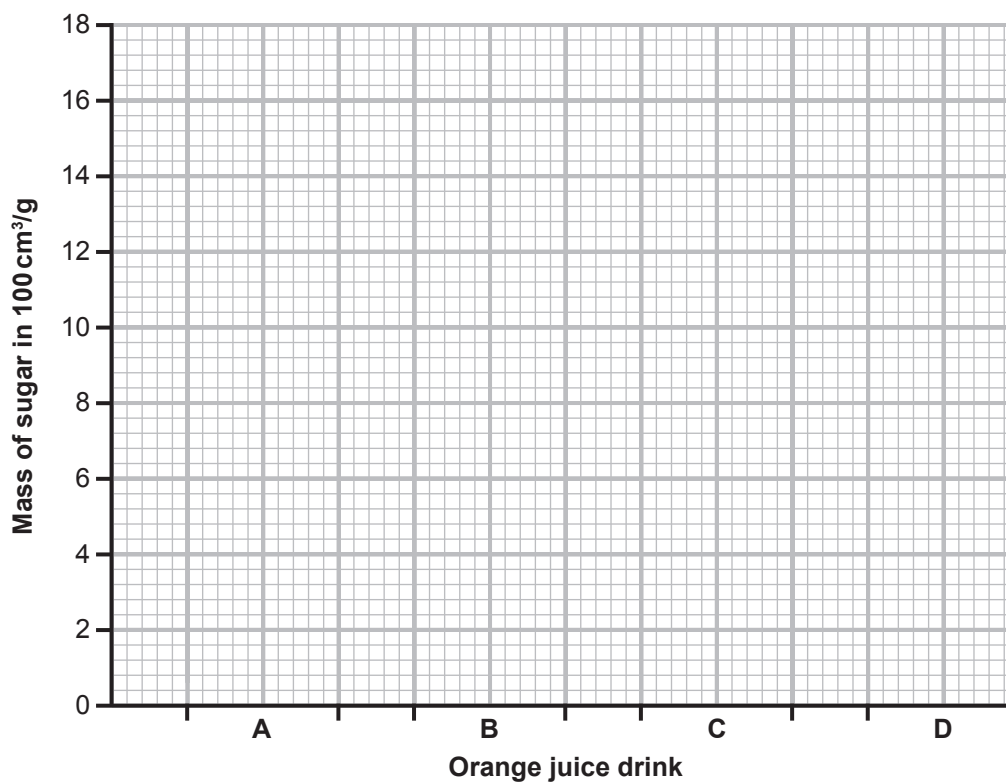
- 5 (a) The table below shows the mass of sugar in 100 cm^3 of four different orange juice drinks (A, B, C and D).



© Getty Images

Orange juice drink	Mass of sugar in $100 \text{ cm}^3/\text{g}$
A	16
B	13
C	11
D	12

- (i) On the grid below draw a bar chart to show this information.



- (ii) A regular bottle of orange juice contains 250 cm^3 . Calculate the mass of sugar in a 250 cm^3 bottle of orange juice **D**.

(Show your working out.)

_____ g [2]

- (b) After drinking orange juice glucose (sugar) levels in the blood increase.

- (i) Complete the following sentences to describe how the body responds to a rise in glucose levels.

The hormone that reduces glucose levels in the blood is

called _____ and it is produced in the pancreas.

This hormone converts glucose to _____, the

organ this happens in is the _____. [3]

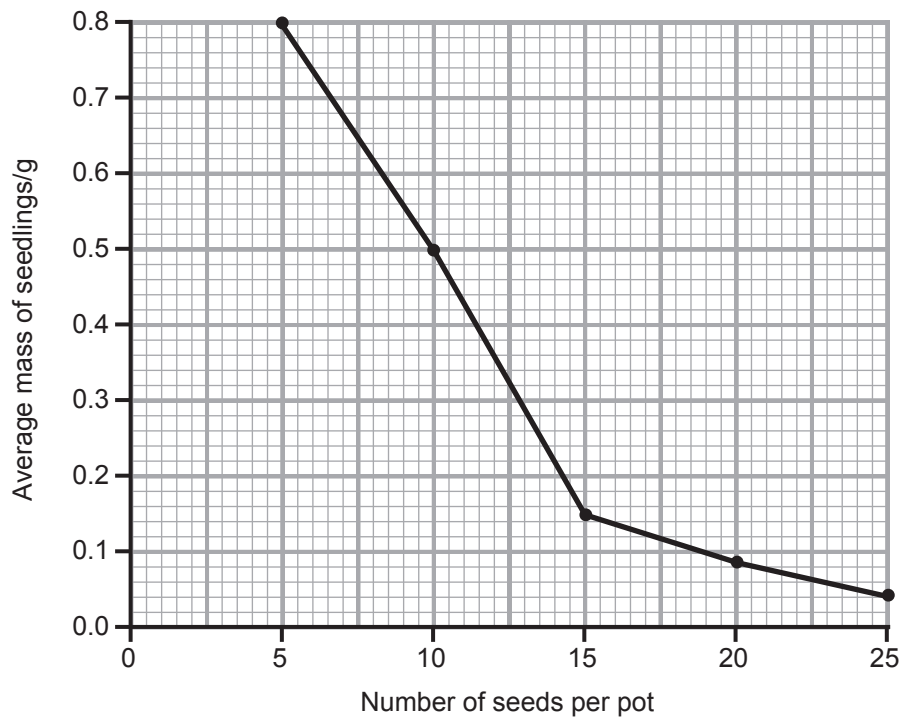
- (ii) Too much sugar in the diet can cause Type 2 diabetes.
Give **one** long term effect on the body of Type 2 diabetes.

_____ [1]

[Turn over



- 6 (a) A student investigated how the mass of seedlings was affected by the number of seeds planted in a pot. The seedlings were weighed after three weeks and the average mass was calculated. The results are shown in the graph below.



- (i) What is the average mass of the seedlings when there were 10 seeds in a pot?

_____ g [1]

- (ii) Calculate the **total** mass of seedlings when there are 15 seeds in a pot.

(Show your working out.)

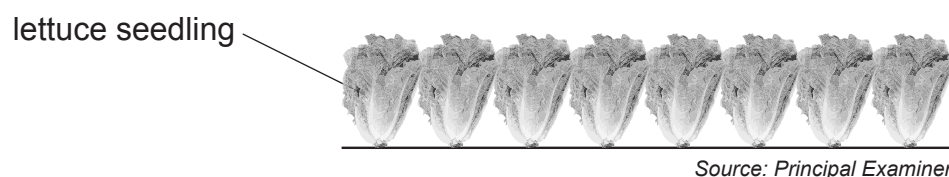
_____ g [2]



(iii) Describe fully the trend shown by these results.

[2]

(b) The diagram below shows a row of lettuce seedlings that have grown from seeds sown by a gardener.



He decides to remove some of the seedlings.
Explain fully why the remaining lettuce seedlings will grow bigger if they have more space.

[2]

[Turn over

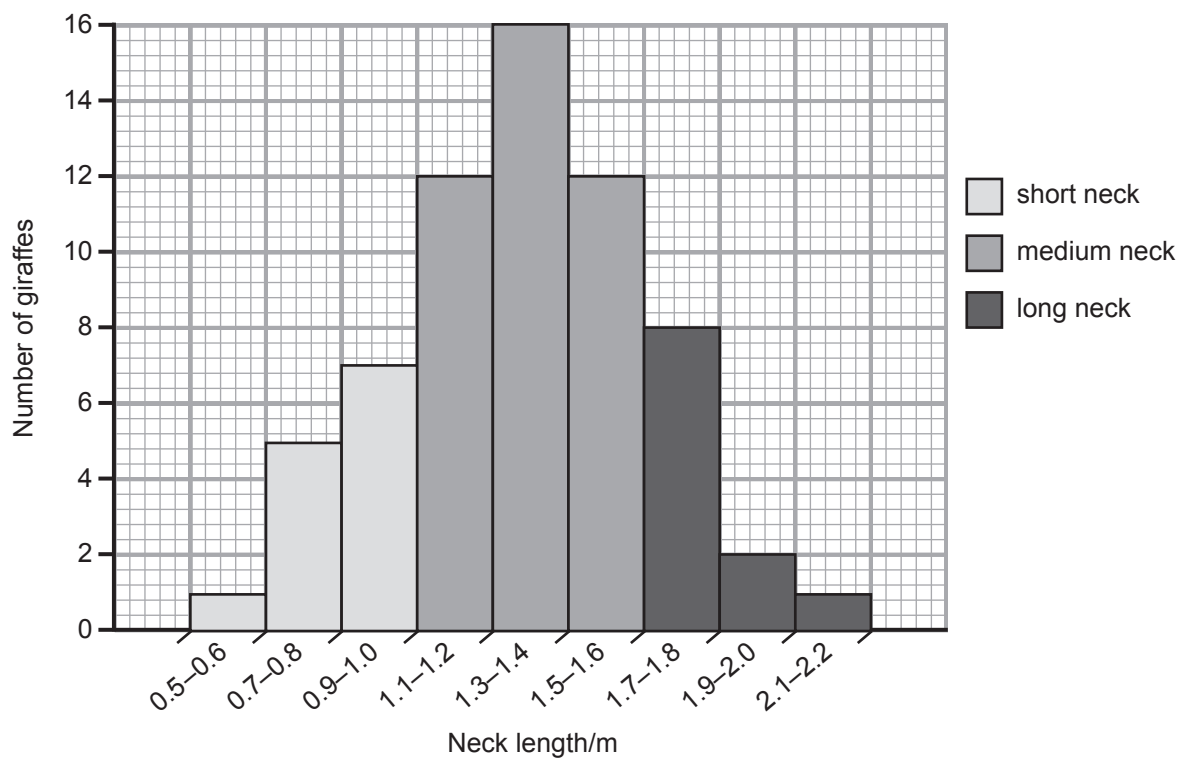


7 (a) A giraffe is an animal with a long neck.



© Getty Images

The graph below shows the neck lengths of **64 giraffes**.



(i) What type of variation is shown by the results in this graph?

_____ [1]

(ii) Calculate the percentage of giraffes with a **medium** neck length.

(Show your working out.)

_____ % [2]

(b) Give **one** cause of variation in a population.

_____ [1]

[Turn over

12682.04R



20GSA1115

- 8 (a) One method of genetic screening involves using a sterile cotton bud to collect cheek cells.



sterile cotton bud

© Arno Massee / Science Photo Library

The sample of cheek cells is then sent to a laboratory so that the DNA can be extracted and analysed.

- (i) Suggest **one** advantage of this simple method of genetic screening.

_____ [1]

- (ii) Name the part of a cell that contains DNA.

_____ [1]

- (iii) What term is used to describe all the genetic material within an organism?

_____ [1]

- (b) The results from a genetic screening test showed David may have health problems in the future. Give **two** ways life insurance companies may disadvantage him.

1. _____

2. _____
_____ [2]



(c) Skin cancer is caused by a mutation in skin cells.

Explain what is meant by the term mutation and how this can lead to cancer.

Your answer should include:

- one factor that triggers skin cancer
- **two** reasons for the increase in skin cancer rates in the UK
- the name of **one** other condition caused by a mutation.

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

[illegible]

[6]

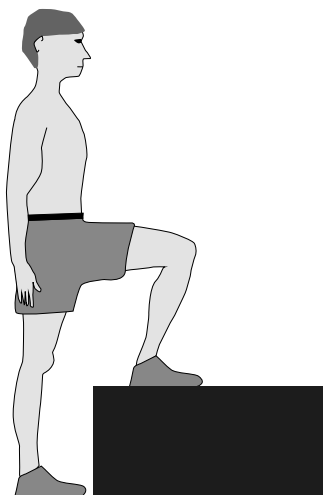
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20GSA1117

- 9 (a) Five students investigated the number of step-ups they could do in 1 minute. They repeated this three more times taking a short break between each test.



Source: Principal Examiner

The results are shown in the table below.

Student	Step-ups in 1 minute			
	Test 1	Test 2	Test 3	Test 4
A	58	54	48	46
B	56	51	49	45
C	58	53	52	49
D	59	54	51	50
E	56	50	46	40

- (i) State the trend shown by this information.

[1]



- (ii) Suggest which student (**A, B, C, D** or **E**) does **not** exercise regularly. Explain your answer.

[2]

- (iii) The students took part in a four week fitness program and then repeated this investigation. Suggest **one** way their results might be different.

[1]

- (b) Continuous exercise produces heat energy due to respiration.

- (i) Complete the word equation for respiration.

glucose + _____ → carbon dioxide + _____ + (heat) energy

[2]

- (ii) What term describes the release of heat energy in respiration?

[1]

THIS IS THE END OF THE QUESTION PAPER



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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	

Total Marks	
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Examiner Number

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