



General Certificate of Secondary Education  
2023–2024

Centre Number

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Candidate Number

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# Single Award Science: Biology

Unit 1  
Foundation Tier



[GSA11]

\*GSA11\*

**WEDNESDAY 21 FEBRUARY 2024, 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 **9(b)**.

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\*20GSA1101\*

1 (a) Animal cells contain three main parts.

Use lines to match each part with its function.

Part	Function
cytoplasm	allows the movement of some substances into and out of the cell
nucleus	control centre of the cell
cell membrane	chemical reactions take place here

[2]

Plant cells have more parts than animal cells.

(b) Name **one** part found in a plant cell but **not** in an animal cell.

\_\_\_\_\_

[1]

(c) Complete the sentence below about stem cells.

Choose from:

**divide** : **join** : **the same** : **a different**

Stem cells are simple cells found in animals and plants that can

\_\_\_\_\_ to form cells of \_\_\_\_\_ type.

[2]





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**(Questions continue overleaf)**

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**[Turn over**



\*20GSA1103\*

2 (a) Vitamins and minerals are important in a healthy diet.

(i) Name the vitamin, found in oranges, which helps prevent scurvy.

\_\_\_\_\_ [1]

(ii) Name the mineral, found in milk, needed for strong bones and teeth.

\_\_\_\_\_ [1]

(b) The table below gives information about 100 g of two different foods, **A** and **B**.

	Food A	Food B
energy/kJ	350	3073
protein/g	1.4	2.5
carbohydrate/g	7.2	50.2
fat/g	1.9	32.2
fibre/g	0.8	5.4

(i) Give **one** reason why eating food **B** instead of food **A** could increase your risk of heart disease.

\_\_\_\_\_  
\_\_\_\_\_ [1]

(ii) Which food, **A** or **B**, will help prevent constipation? Give **one** reason for your answer.

\_\_\_\_\_  
\_\_\_\_\_ [1]



(iii) Calculate the difference in the **energy** content of food **A** compared to food **B**.

(Show your working out.)

\_\_\_\_\_ kJ [2]

(c) Benedict's reagent is used in food tests.

(i) What colour is Benedict's reagent before it is used in a food test?

\_\_\_\_\_ [1]

(ii) Name the type of food which is tested for using Benedict's reagent.

Circle your answer.

**protein**

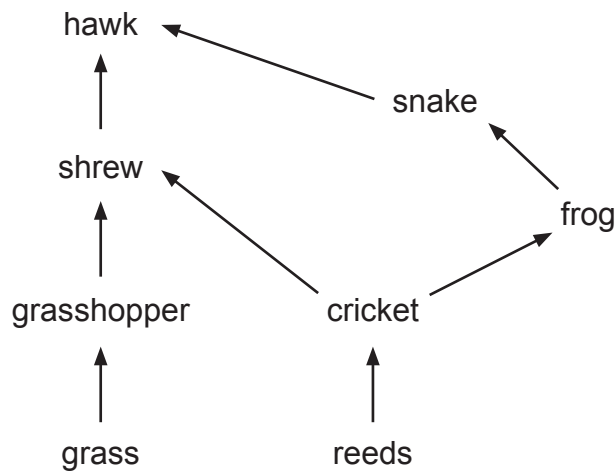
**sugar**

**starch**

[1]



3 The food web below shows how a number of food chains are connected.



(a) Name **one** secondary consumer from this food web.

\_\_\_\_\_ [1]

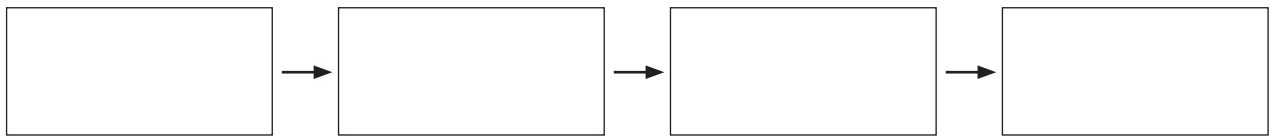
(b) What is the original source of energy for this food web?

\_\_\_\_\_ [1]

(c) How many food chains make up this food web?

\_\_\_\_\_ [1]

(d) In the boxes below give a **complete** food chain containing four organisms from this food web.



[2]

(e) What effect, if any, would removing the grass have on the number of grasshoppers?

\_\_\_\_\_ [1]



4 The central nervous system (CNS) controls and coordinates responses within the body.

(a) Name the **two** parts of the central nervous system.

1. \_\_\_\_\_

2. \_\_\_\_\_ [2]

(b) (i) Give **one** way that a voluntary action is different from a reflex action.

\_\_\_\_\_

\_\_\_\_\_ [1]

(ii) The table below gives some actions carried out by the body.  
Place a tick (✓) beside each action to show if it is voluntary or reflex.

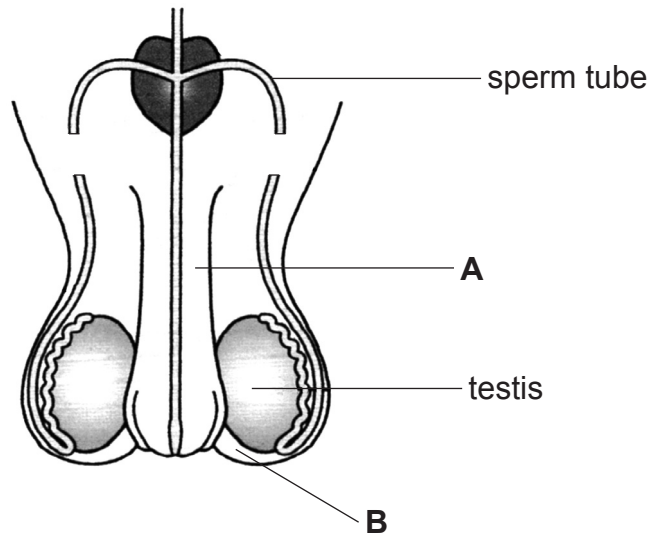
Action	Voluntary	Reflex
sneezing		
writing		
heart beating		
reading		

[2]

[Turn over



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



(i) Name the parts labelled **A** and **B**.

**A** \_\_\_\_\_

**B** \_\_\_\_\_ [2]

(ii) What is the function of a testis?

\_\_\_\_\_ [1]

(b) A vasectomy is a surgical method of contraception used by males.

(i) How does the diagram show that a vasectomy has been carried out?

\_\_\_\_\_  
\_\_\_\_\_ [1]

(ii) Suggest why a vasectomy may **not** be a suitable method of contraception for a newly married couple who may want children in the future.

\_\_\_\_\_  
\_\_\_\_\_ [1]





(c) (i) Name **one** mechanical method of contraception used by males.

\_\_\_\_\_ [1]

(ii) Name **one** chemical method of contraception used by females.

\_\_\_\_\_ [1]

[Turn over

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\*20GSA1109\*

- 6 (a) A student measured the height of plants in a field. The table below shows the number of plants in each height range.

Height range/cm	Number of plants
0.1 – 5.0	1
5.1 – 10.0	3
10.1 – 15.0	7
15.1 – 20.0	5
20.1 – 25.0	2

- (i) Height in plants is an example of continuous variation. What is meant by the term **continuous variation**?

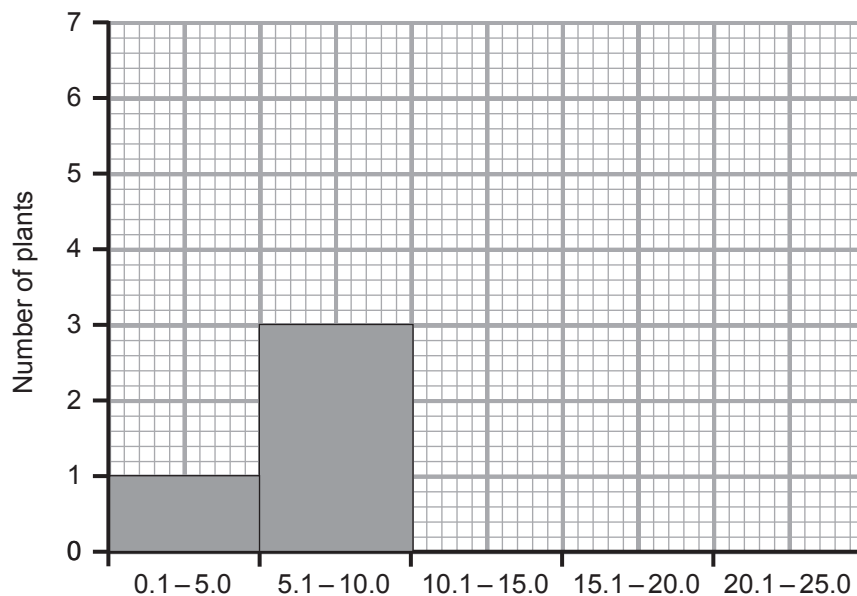
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[1]

- (ii) On the grid below:

- add a label for the x-axis in the box provided and
- complete the graph using the results from the table.



[3]



(iii) Name this type of graph, used to show continuous variation.

\_\_\_\_\_ [1]

(b) Variation in plants and animals can be caused by mutations.

(i) What is meant by the term **mutation**?

\_\_\_\_\_  
\_\_\_\_\_ [2]

(ii) Give **one** cause of mutations.

\_\_\_\_\_ [1]

[Turn over

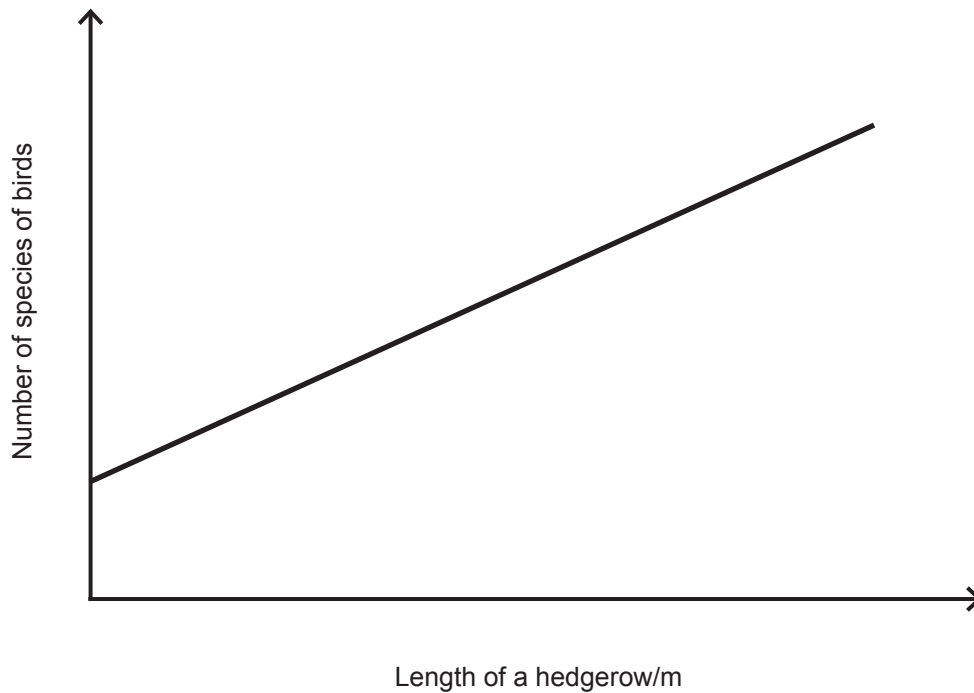
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\*20GSA1111\*

7 (a) Hedgerows provide an important wildlife habitat for mammals, birds and insects.

The graph below shows the relationship between the length of a hedgerow and the number of species of birds in an area.



(i) Describe the trend shown by this graph.

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[1]

(ii) Suggest what effect, if any, a longer hedgerow will have on the biodiversity in an area. Explain your answer.

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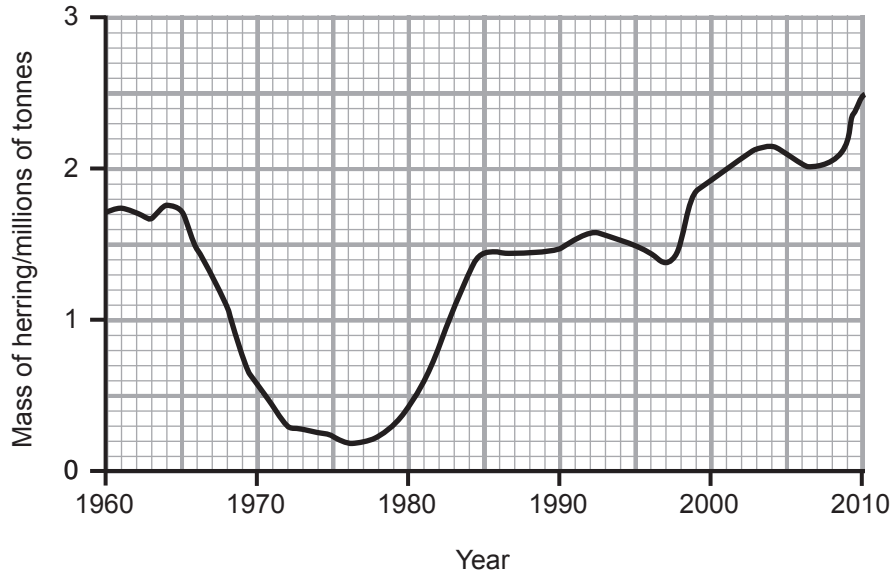
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[2]



(b) Herring is a species of fish found in the North Sea.

The graph below shows the total mass of herring in the North Sea from 1960 to 2010.



(i) Use the graph to suggest why fishing for herring in the North Sea was banned in 1977.

\_\_\_\_\_ [1]

(ii) In 1997 fishing quotas were introduced to protect the herring. Give **one** piece of evidence from the graph that shows this was successful.

\_\_\_\_\_  
\_\_\_\_\_ [1]

[Turn over

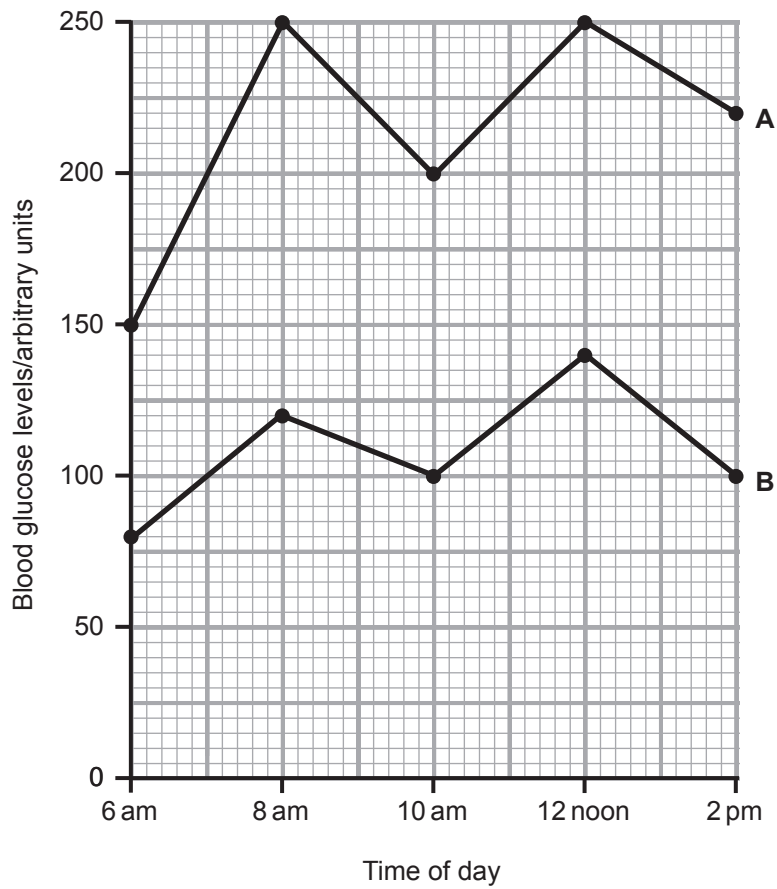


8 Diabetes is a condition in which the blood glucose control mechanism fails.

(a) Give **two** symptoms of diabetes.

1. \_\_\_\_\_
2. \_\_\_\_\_ [2]

(b) The graph below shows how the blood glucose levels for two people, **A** and **B**, changed over an eight-hour period. One of these people has diabetes.



(i) Use the graph and your knowledge to give **two** reasons which suggest that person **A** has diabetes.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_ [2]

(ii) Suggest **one** reason why the blood glucose levels for both persons **A** and **B** are lowest at 6 am.

\_\_\_\_\_

\_\_\_\_\_ [1]

(iii) Calculate the percentage increase in blood glucose levels for person **B** between 6 am and 8 am.

(Show your working out.)

\_\_\_\_\_ % [2]

Both persons **A** and **B** ate the same snack at 10 am.

(iv) Suggest what food type was in the snack.

\_\_\_\_\_ [1]

[Turn over

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\*20GSA1115\*

9 Covid-19 is caused by a virus and is passed from person to person in the same way as colds and flu. During the Covid-19 pandemic people were advised to avoid close contact with each other.

(a) Suggest how Covid-19 is passed from person to person and explain why avoiding close contact slows down the spread of this disease.

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[2]

Several medicines are now used to treat people with Covid-19. Before a medicine can be made available to the public there are a number of stages of development that must take place.

(b) Describe the stages involved in the development of a new medicine before it is licensed for use by the public.

Your answer should include:

- the name and a brief description of each stage; and
- the reason for each stage.

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

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[6]

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\*20GSA1119\*

Sources:

Q5(a) . . . . . *Principal Examiner*

Q7(b) . . . . . *Adapted from: © Biomass of North Sea herring fitted by the Schaefer model to the ICES... | Download Scientific Diagram (researchgate.net) licenced under Deed - Attribution 4.0 International - Creative Commons*

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Question Number	Marks
1	
2	
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9	

<b>Total Marks</b>	
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Examiner Number

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