Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2022–2023

Single Award Science: Biology

Unit 1

Foundation Tier

[GSA11]

GSA11

TUESDAY 16 MAY 2023, 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 eight** questions.

INFORMATION FOR CANDIDATES

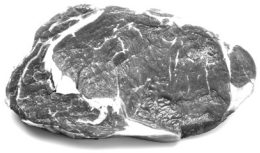
The total mark for this paper is 60.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in Question **7(a)**.

14005

20GSA1101

1 The photographs below show three foods.

(a) Using lines, match each food with the main nutrient it contains.

Food	**Nutrient**
red meat 	vitamin C
lemon	calcium
milk	iron

[2]

(b) What is the function of calcium in the body?

_____ [1]

(c) Protein is needed for growth and repair of body cells.

(i) Which food does **not** contain protein?

Circle your answer.

red meat : lemon : milk

[1]

(ii) Name the reagent used to test a food for the presence of **protein**.

Circle your answer.

Biuret Benedict's Iodine

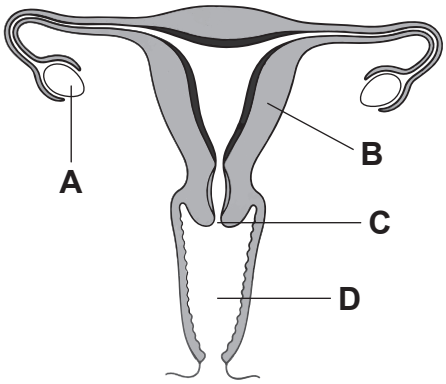
[1]

(iii) Complete the following sentence.

If protein is present the reagent will change colour from blue

to _____ . [1]

2 **(a)** The diagram below shows the female reproductive system. Four parts have been labelled **A**, **B**, **C** and **D**.



(i) Complete the table below by placing the correct letter **A**, **B**, **C** or **D** beside the name of each part.

Name	Letter
cervix	
vagina	

[2]

(ii) Which part **A**, **B**, **C** or **D** produces eggs?

_____ [1]

(b) The table below gives the function of two parts of the male reproductive system. Complete the table by naming the parts.

Choose from:

penis : scrotum : sperm duct : urethra

Function	Part
places sperm inside female body	
holds the testes outside the body	

[2]

Male sterilisation (a vasectomy) prevents the sperm leaving the male body.

(c) Name the part of the male reproductive system that is cut during a vasectomy.

Circle your answer.

scrotum : sperm ducts : urethra

[1]

3 **(a)** Insulin is a hormone produced in the pancreas that controls the level of a substance in the body.

(i) Complete the following sentence to describe a hormone.

A hormone is a _____ messenger that travels

in the _____ to a target organ. [2]

(ii) Name the substance controlled by insulin.

Choose from:

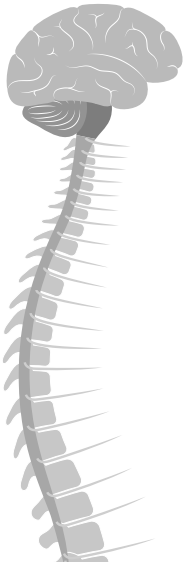
glucose **protein** **starch**

_____ [1]

(iii) Name the target organ for insulin.

_____ [1]

(b) Part of the central nervous system (CNS) is shown below.



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

_____ and _____ [2]

(ii) Complete the following sentence to describe the function of the central nervous system (CNS).

The CNS controls and co-ordinates the responses between

_____ and effectors. [1]

(iii) Name the effector controlled by the CNS.

_____ [1]

4 **(a)** Respiration is an exothermic reaction.

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

_____

_____ [1]

(ii) Complete the word equation below for respiration.

glucose + [ ] → [ ] + water + energy

[2]

(b) Respiration uses glucose.

(i) Name the process that occurs in green plants that **produces** glucose.

_____ [1]

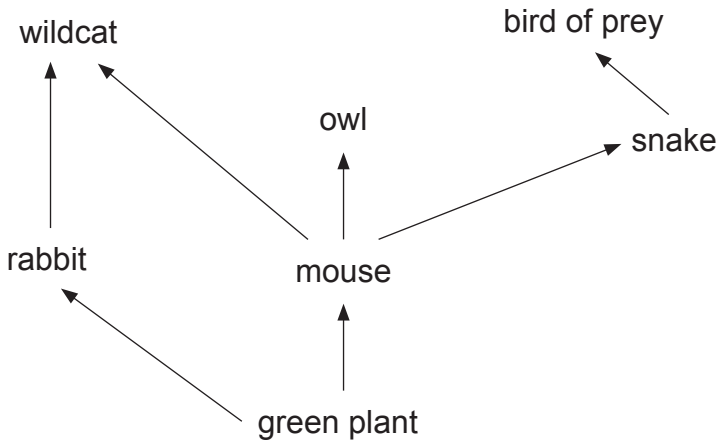
(ii) Suggest when this process to produce glucose happens in green plants.

Place a tick (✓) in the table below beside the correct statement.

Statement	**Tick (✓)**
all the time	
only in daylight	
only in darkness	

[1]

(c) The food web below shows the relationships between organisms in a mountain forest.



(i) Name **one** primary consumer in this food web.

_____ [1]

(ii) The energy produced by the green plant passes through the food web. How is this flow of energy shown on the diagram?

_____ [1]

(d) The food chain below is part of the food web and shows the amount of energy available to the organism at each level.

green plant 1000 kJ	→	mouse 100 kJ	→	snake 10 kJ	→	bird of prey 1 kJ

(i) Calculate the amount of energy lost between the mouse and the snake.

_____ kJ [1]

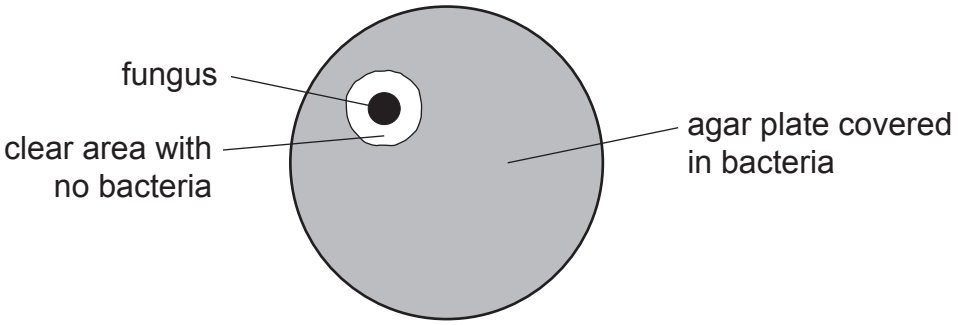
(ii) Suggest **one** way the mouse uses energy.

_____

_____ [1]

[Turn over

5 **(a)** Alexander Fleming grew bacteria which completely covered an agar plate. When he looked at the agar plate two weeks later it was contaminated with a fungus, as shown below.



(i) Explain fully why there is a clear area with no bacteria around the fungus.

_____

_____ [2]

(ii) Name the antibiotic developed from this fungus.

_____ [1]

(iii) Name **one** of the scientists who used Fleming's discovery to develop this antibiotic.

_____ [1]

(iv) Why can antibiotics **not** be used to treat the flu?

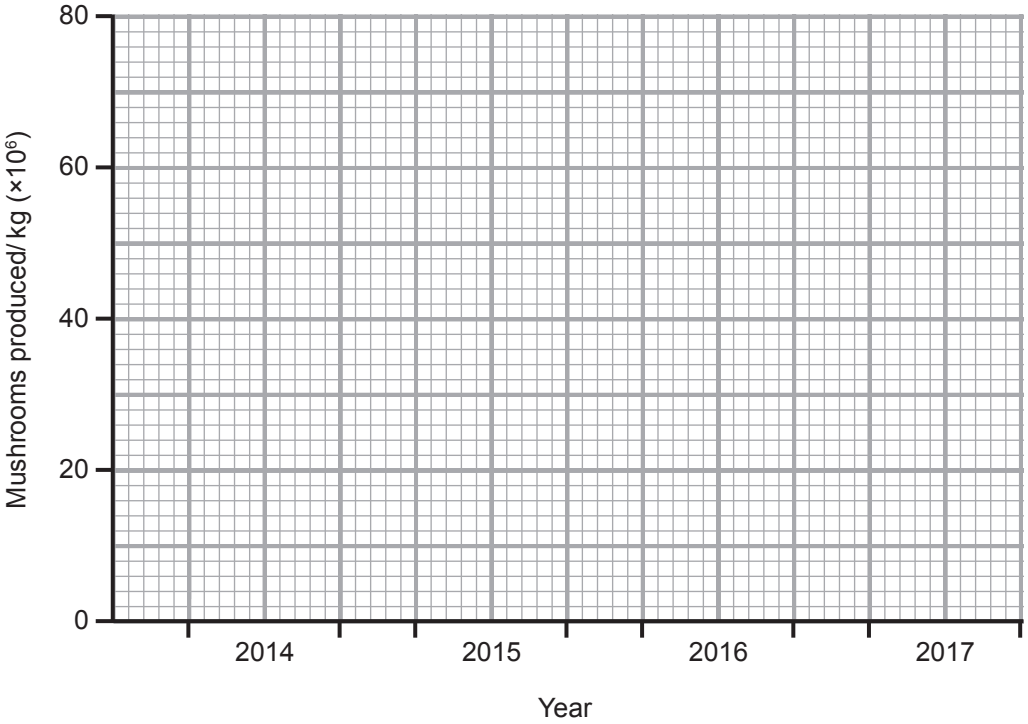
_____

_____ [1]

(b) Mushrooms are a type of fungus that can be eaten. The table below shows the mass of mushrooms produced in Ireland between 2014 and 2017.

Year	Mushrooms produced/ kg ($\times 10^6$)
2014	21
2015	64
2016	55
2017	70

(i) On the grid below, draw a bar graph to show the information in the table opposite.



[2]

(ii) Calculate the total mass of mushrooms produced between 2014 and 2017.

_____ kg ($\times 10^6$) [1]

(iii) Calculate the percentage of the total mass of mushrooms that were produced in **2014**.

(Show your working out.)

_____ % [2]

[Turn over

6 **(a)** The photograph below shows redwood trees in a forest in California.

The height of the trees is an example of continuous variation.

(i) What is meant by the term **continuous variation**?

_____

_____ [1]

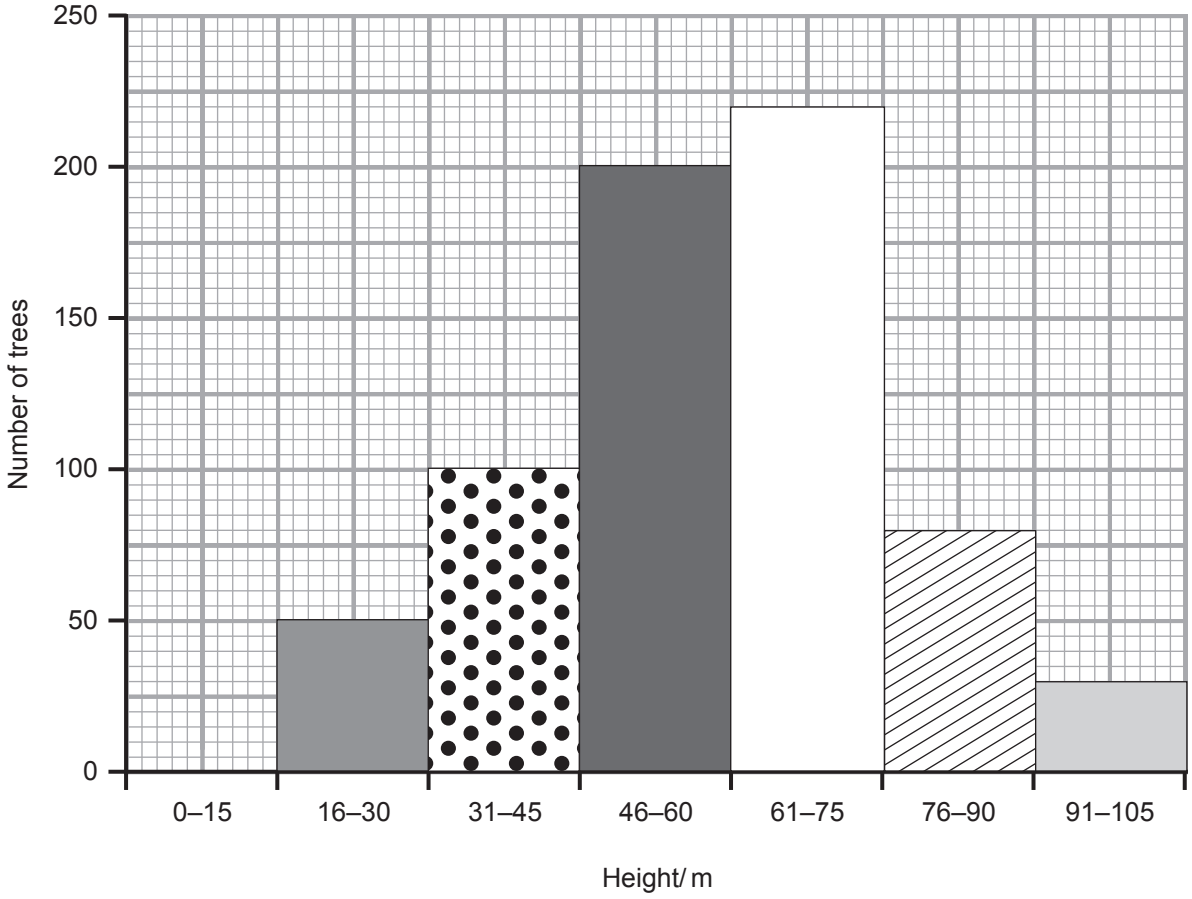
(ii) Apart from height, give **one** other example of continuous variation.

_____ [1]

(b) Continuous and discontinuous are two types of variation.
Give **one** cause of these types of variation.

_____ [1]

(c) The graph below shows the variation in heights of all the redwood trees in a forest.



(i) Name the type of graph shown above.

_____ [1]

(ii) Complete the following sentence.

The most common tree height in this forest is between _____

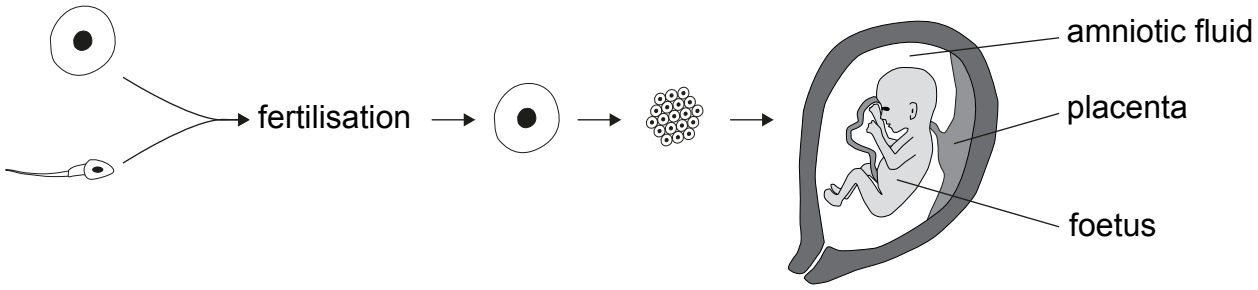
and _____ m. [1]

(iii) Suggest a height for the tallest tree in this forest.

_____ m [1]

[Turn over

7 The diagram below shows some of the stages in the development of a foetus.



(a) Describe the stages in the development of a foetus.

Your answer should include a description of:
- the process of fertilisation and where it occurs;
- the stages after fertilisation; and
- the function of the placenta and amniotic fluid.

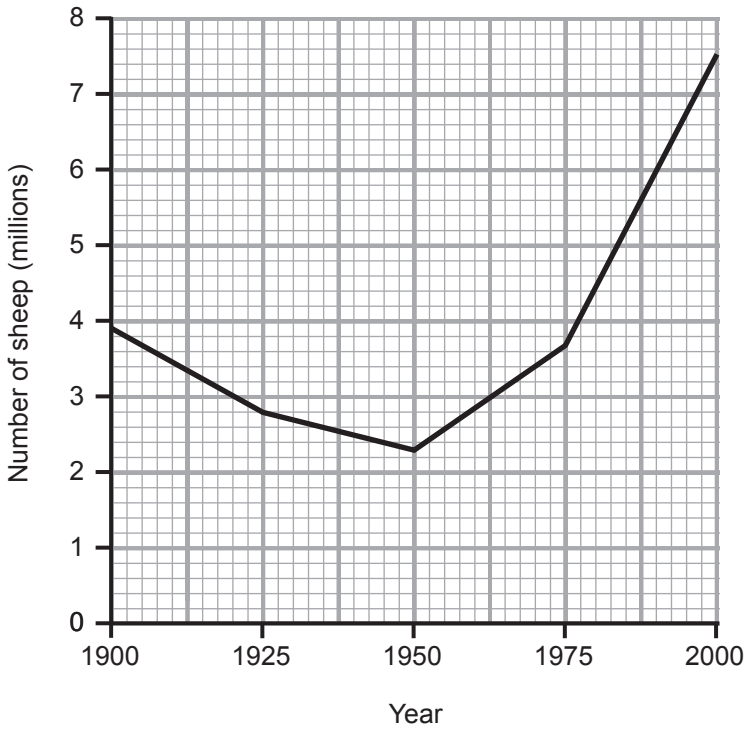
In this question you will be assessed on your written communication skills including the use of specialist scientific terms.

[6]

(b) Why do doctors advise pregnant women to avoid drinking alcohol?

[1]

8 The graph below shows the number of sheep grazing in the west of Ireland from 1900–2000.



(a) Describe fully the trend shown in this graph.

_____

_____

_____ [2]

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(b) Sheep can cause a decrease in biodiversity in the area where they graze.

(i) Explain fully what is meant by the term **biodiversity**.

_____

_____ [2]

(ii) Suggest **two** actions farmers could take to increase biodiversity on their land while still allowing sheep to graze.

1. _____

_____

2. _____

_____ [2]

Competitive invasive species such as Japanese knotweed can also decrease biodiversity in the west of Ireland.

(iii) Suggest **two** ways Japanese knotweed can decrease biodiversity.

1. _____

_____

2. _____

_____ [2]

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Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
Total Marks	

Examiner Number

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