Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2018–2019

Single Award Science: Biology

Unit 1

Foundation Tier

[GSA11]

GSA11

WEDNESDAY 27 FEBRUARY 2019, 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 **7**.

12272

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1 Diseases can be caused by three main types of microorganisms; bacteria, fungi and viruses.

(a) Using lines, link each type of microorganism to the disease that it causes.

Microorganism	Disease
bacteria	potato blight
virus	HIV (can cause AIDS)
	salmonella

[2]

Tuberculosis is a disease that can be treated using an antibiotic.

(b) What type of microorganism causes tuberculosis?

Circle the correct answer.

bacteria **virus** **fungi**

[1]

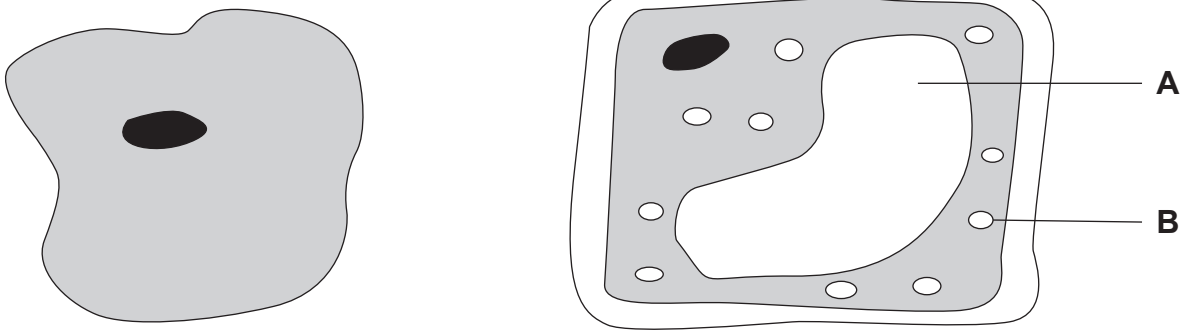
Athlete's foot is a fungal infection that affects the feet. It can be spread by contact with infected skin cells left on towels, shoes or floors.

(c) Suggest how someone might avoid catching athlete's foot from an infected person.

_____ [1]

[Turn over

2 **(a)** Diagrams of a typical animal and plant cell are shown below.



animal cell **plant cell**

Source: Principal Examiner

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

Choose from:

cell membrane : vacuole : nucleus : chloroplast

A _____

B _____ [2]

(ii) A typical plant cell has six parts. How many parts does a typical animal cell have?

_____ [1]

(b) The steps involved in making and viewing a slide of onion cells are outlined below.
They are **not** in the correct order.

A	Add a drop of iodine solution to the cells
B	Peel off a thin layer of onion cells
C	Lower a coverslip over the cells
D	Place a thin layer of cells on the microscope slide
E	View under a microscope at low power

(i) Using the letters **A**, **B**, **C**, **D** and **E** put the steps in the correct order.
The first one has been done for you.

B _____ _____ _____ _____ _____ [2]

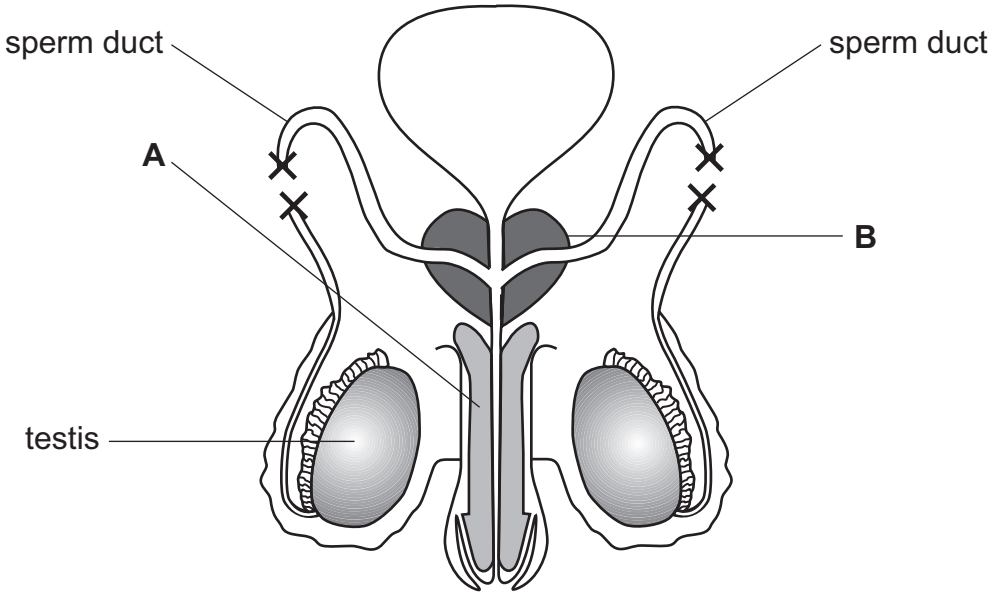
(ii) When viewing cells under a microscope, give **one** reason why it is important to focus at low power before focusing at a higher power.

_____

_____ [1]

[Turn over

3 **(a)** The diagram below represents the reproductive system of a man who has had a vasectomy.



(i) Complete the table below by naming parts **A** and **B**.

Letter	Name
A	
B	

[2]

(ii) What is the function of the testis?

_____ [1]

(b) A vasectomy is a form of contraception.

(i) What evidence is there in the diagram to show this man has had a vasectomy?

_____

_____ [1]

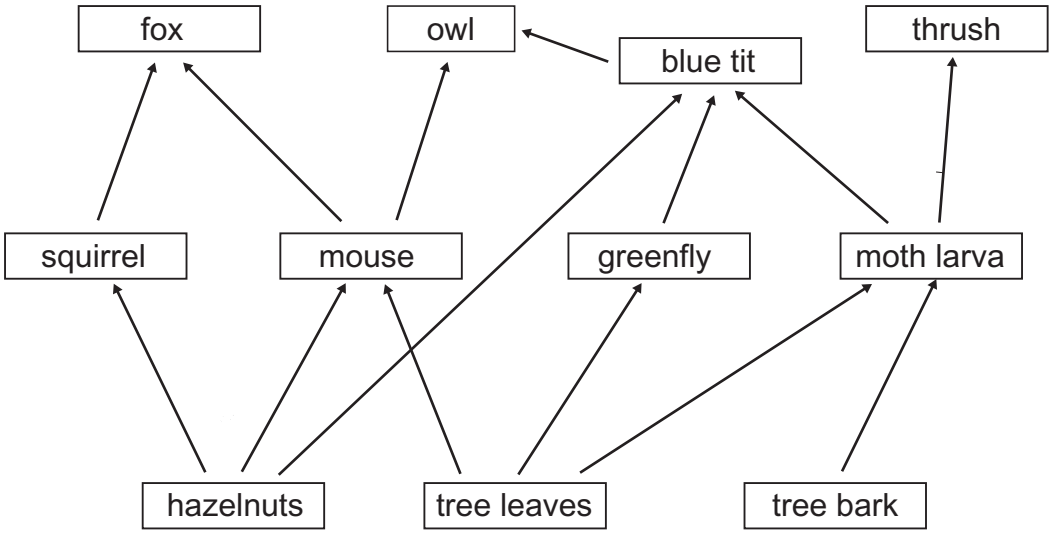
(ii) Suggest one reason why a doctor would **not** advise a 25 year old male to have a vasectomy.

_____

_____ [1]

[Turn over

4 **(a)** The diagram below shows part of a food web.



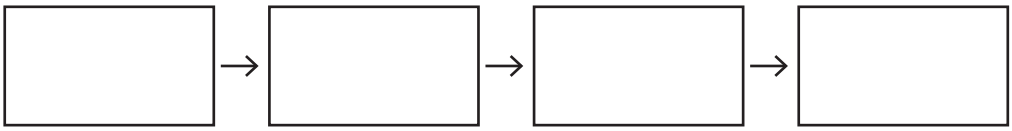
(i) Name **one** primary consumer from this food web.

_____ [1]

(ii) What do the arrows in this food web represent?

_____ [1]

(iii) Use the food web to complete a food chain containing four organisms.



[2]

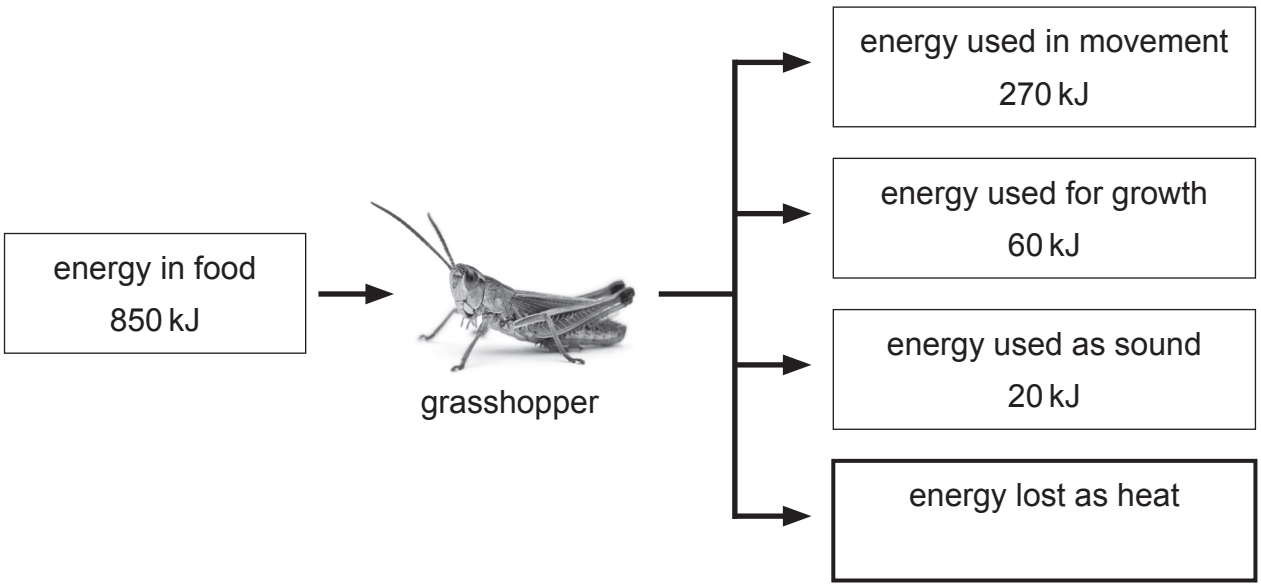
(b) Suggest what might happen to the number of moth larvae if the thrush population increases. Explain your answer.

_____

_____

_____ [2]

(c) The diagram below shows how the grasshopper uses **all** the energy from the food it has eaten.



(i) Calculate the energy lost by the grasshopper as heat.

(Show your working out.)

_____ kJ [2]

(ii) Name the process carried out by the grasshopper which releases the heat energy.

_____ [1]

[Turn over

5 Pupils investigated the effect of planting density (number of seeds in a pot) on the average mass of seedlings.

The results are shown below.

Pot	**A**	**B**	**C**	**D**
Planting density	1	5	10	15
Average mass of seedlings/g	20	13	7	5

(a) Describe and explain how the planting density affects the average mass of seedlings.

_____

_____

_____

_____

_____

_____ [3]

(b) Suggest **two** things that had to be done in this investigation to make the results valid (fair test).

1. _____

2. _____ [2]

(c) The pupils also recorded the total mass of seedlings in each pot.
Describe how the pupils found a value for the average mass of seedlings for pot **D**.

_____

_____ [1]

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(Questions continue overleaf)

6 Laura investigated the effect of two different types of exercise on her pulse rate. Her results are shown below.

Time doing exercise/ min	Pulse rate/beats per minute (bpm)	
	Walking	Running
0	75	75
5	80	86
10	89	100
15	96	110
20	102	125

(a) What is Laura's resting pulse rate?

_____ bpm [1]

(b) Give one similarity and one difference in the **trend** in Laura's pulse rate with the two different types of exercise.

similarity _____

_____

difference _____

_____ [2]

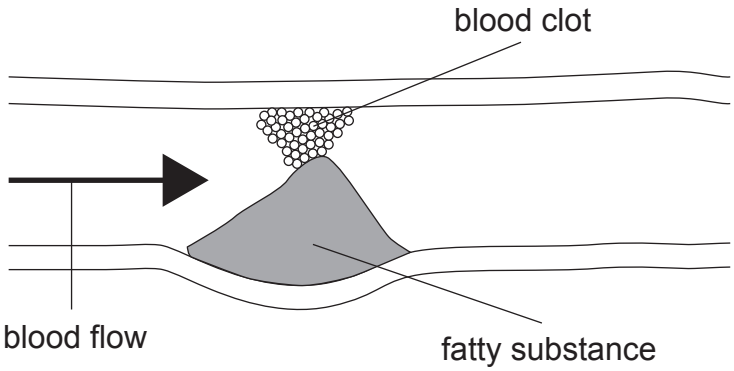
(c) Calculate the percentage increase in Laura's pulse rate after twenty minutes of **running**.

(Show your working out.)

_____ % [2]

[Turn over

7 The diagram below shows a coronary artery from a person with heart disease.



Explain why this person may have a heart attack.

Your answer should include:

- the name of the fatty substance
- the steps that lead to a heart attack
- two **lifestyle** factors which can increase the risk of having a heart attack.

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

[6]

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(Questions continue overleaf)

8 **(a)** Hormones such as insulin are produced by the body.

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

A hormone is a chemical messenger _____

_____

_____ [2]

(ii) Describe and explain the effect of insulin on blood glucose levels.

_____

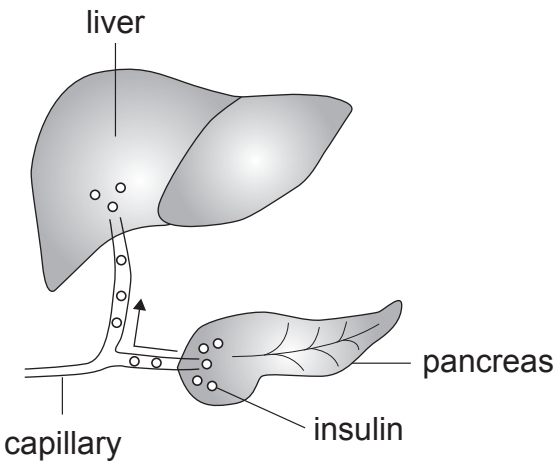
_____

_____

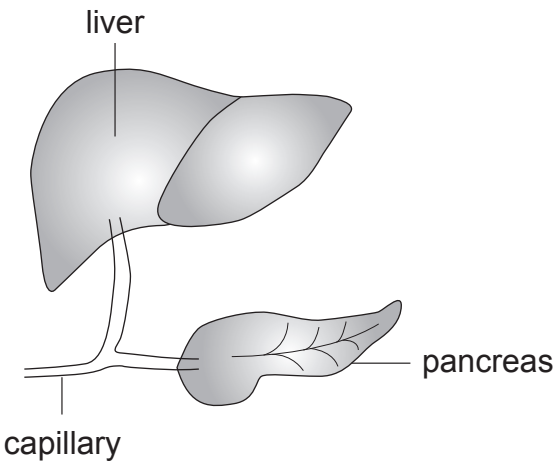
_____ [2]

The diagrams below show the pancreas and liver from two different people.

Person A



Person B



Source: Principal Examiner

(b) Using the diagram name the medical condition that person **B** has. Explain your answer.

_____

_____

_____

_____ [2]

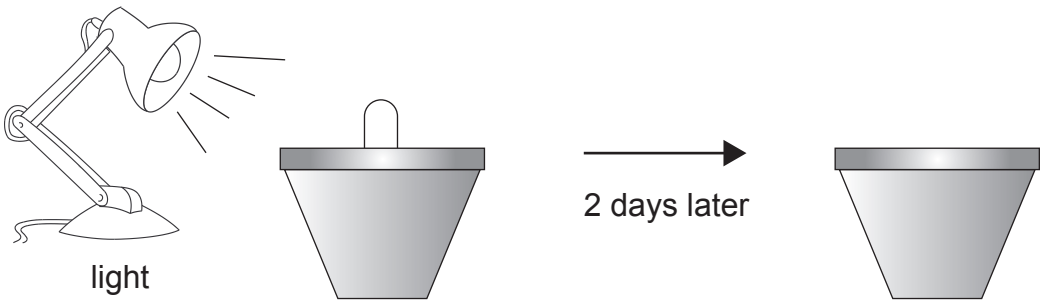
[Turn over

(c) Auxin is a hormone produced in a plant that causes a growth response to light which allows more photosynthesis to take place.

(i) Name this growth response.

_____ [1]

The diagram below shows an investigation into a plant's growth response to light.



Source: Principal Examiner

(ii) Complete the diagram to show how the plant has responded to light after 2 days. [2]

(iii) Suggest how the plant would respond if it was receiving light from directly above it.

_____

_____ [1]

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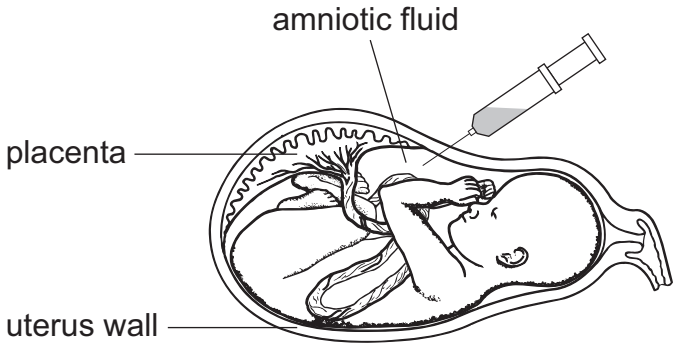
(Questions continue overleaf)

9 **(a)** The table below shows the relationship between the age of a pregnant woman and the risk of her child having Down's syndrome.

Age of woman/years	Risk of having a child with Down's syndrome
25	1 in 1350
30	1 in 940
35	1 in 350
40	1 in 85
45	1 in 35
50	1 in 10

The amniocentesis test removes some amniotic fluid from around the foetus which can be used to find out if the foetus has Down's syndrome.



Source: Principal Examiner

(i) What is the function of the amniotic fluid?

_____

_____ [1]

There is a 1 in 100 risk of a miscarriage (loss of foetus) with this test.

(ii) Explain fully why this test is normally only offered to pregnant women over the age of 35 and not offered to pregnant women under 35 years.

_____

_____

_____

_____ [2]

Recently a test for Down's syndrome using blood taken from the arm of a pregnant woman has been developed.

(iii) Suggest why pregnant women may prefer to have the blood test and not the amniocentesis test.

_____

_____ [1]

(b) Down's syndrome is caused by a mutation.

(i) Describe fully what is meant by the term **mutation**.

_____

_____

_____ [2]

(ii) Name **one** other inherited condition caused by a mutation.

_____ [1]

[Turn over

(c) The diagram below shows a short section of DNA.

(i) What name is given to the shape of DNA?

_____ [1]

(ii) Complete the following sentence.

The entire genetic material of an organism is called

the _____. [1]

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For Examiner's use only	
Question Number	Marks
1	
2	
3	
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8	
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Total Marks	

Examiner Number