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Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2017–2018

Science: Single Award

Unit 1 (Biology)
Foundation Tier

GSS11

[GSS11]

WEDNESDAY 21 FEBRUARY 2018, MORNING

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all ten** 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 **10**.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total Marks	

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Marks	Remark

1 **(a)** Shown below is a simple food chain.

In this food chain how are the dandelion and grasshopper described?

Choose from:

decomposer : primary consumer : secondary consumer : producer

1. Dandelion _____

2. Grasshopper _____ [2]

(b) What do the arrows represent in a food chain?

_____

_____ [1]

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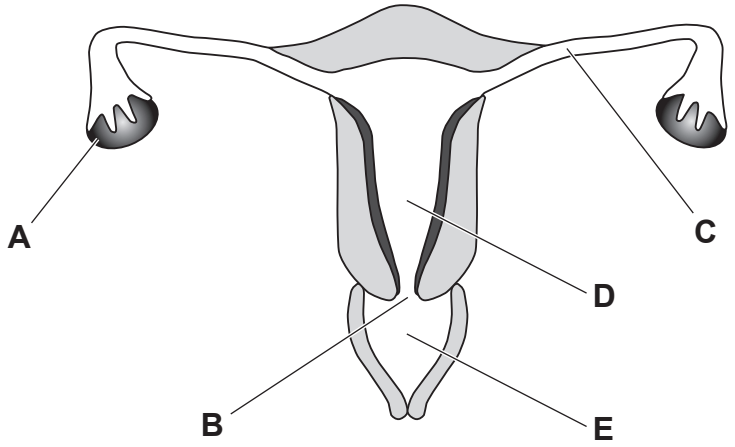
2 **(a)** The diagram below represents the female reproductive system.



Source: CCEA

(i) Complete the table using the letters **A**, **B**, **C**, **D** or **E** to give the position of each named part.

Name	Letter
oviduct	
uterus	
vagina	

[3]

(ii) Use the letters **A**, **B**, **C**, **D** or **E** to complete the sentences below.

During sexual intercourse, sperm are placed in _____ and

from there they swim up through the female reproductive system.

If there is an egg in _____ fertilisation can take place. [2]

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(b) There are a number of methods of contraception.

(i) Two of these methods are given below. Using lines, link each method with the description of how it works.

Method	Description
condom	changes hormone levels and stops an egg being released
vasectomy	the sperm tubes are cut
	forms a barrier to stop sperm entering the female

[2]

(ii) Name the most reliable method of contraception.

Choose from:

sterilisation **pill** **condom**

_____ [1]

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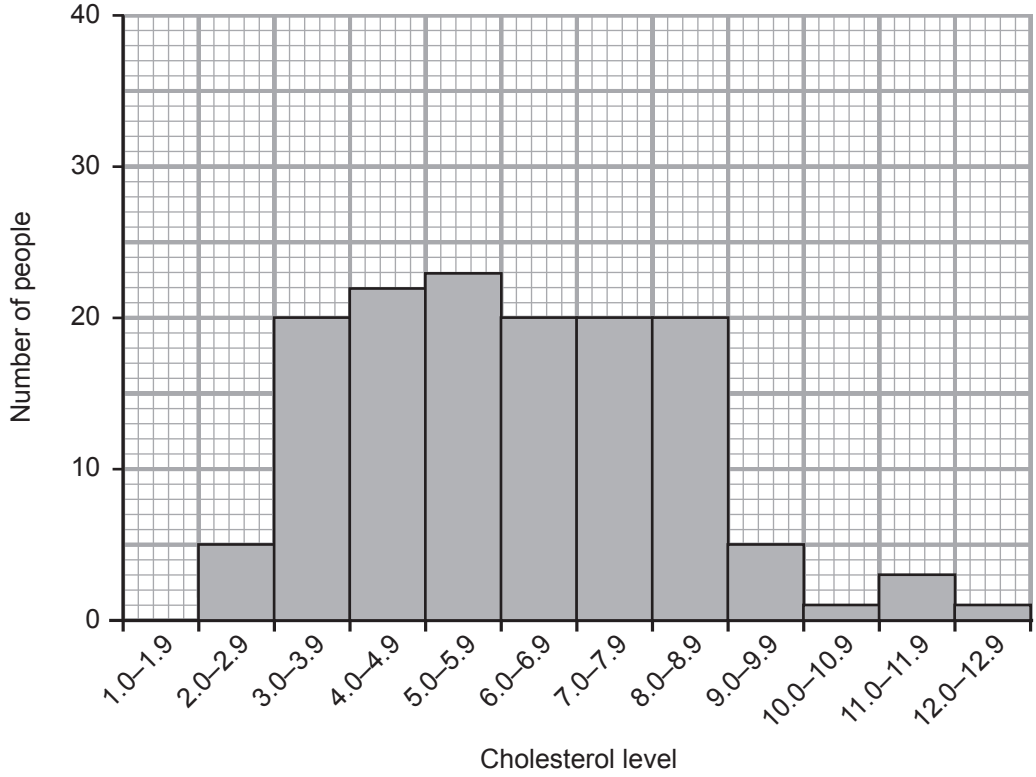
3 **(a)** The graph below shows the cholesterol levels of 140 people who were tested at a clinic in one day.



It is recommended that adults have a cholesterol level of less than 6.

(i) How many people had a cholesterol level of less than 6?

Answer _____ [1]

(ii) Calculate the **percentage** of people who had a cholesterol level of less than 6.

(Show your working out.)

Answer _____ % [2]

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(iii) The data for cholesterol level shows continuous variation. What is the evidence for this?

_____

_____ [1]

(b) High cholesterol levels are regarded as a dietary risk factor for heart disease.

(i) Give one other **dietary** risk factor for heart disease.

_____ [1]

(ii) Give one **lifestyle** factor that can increase the risk of heart disease.

_____ [1]

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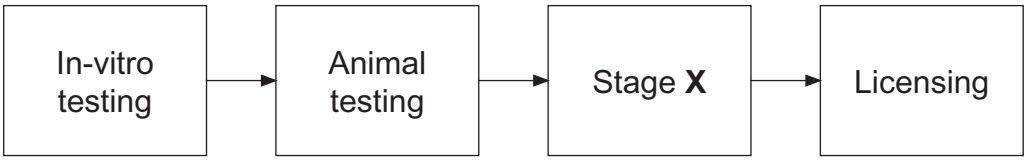
4 The flow chart below shows some of the stages in testing medicines.



(a) Name the stage labelled **X** in the flow chart.

_____ [1]

(b) Give **one** advantage and **one** disadvantage of animal testing.

Advantage _____

_____

Disadvantage _____

_____ [2]

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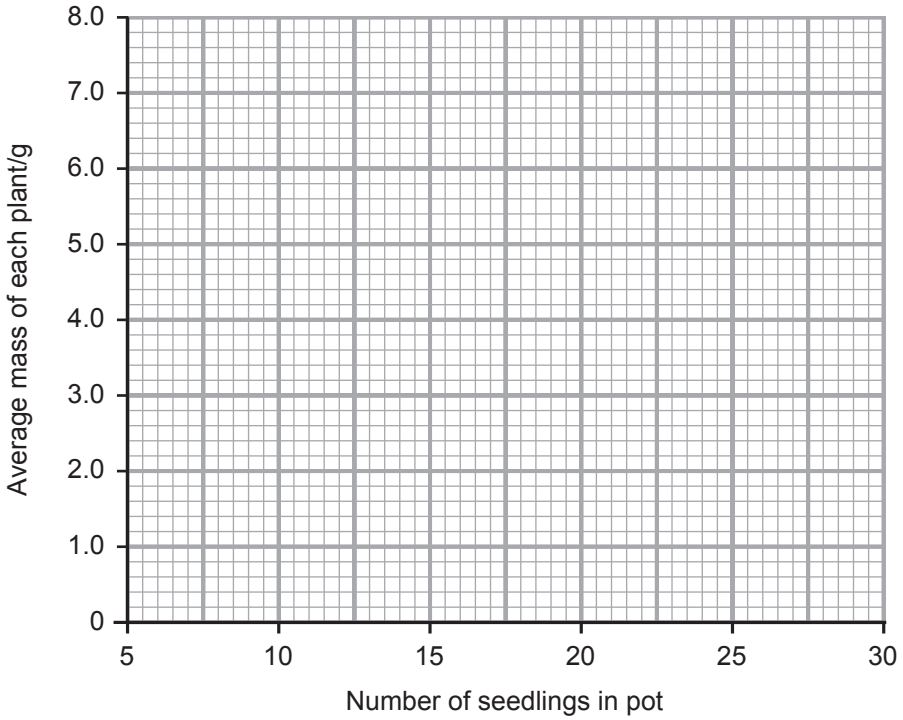
5 Some students investigated the effect of seedling numbers on the mass of plants after they had grown. Their results are shown below.

Number of seedlings in pot	Average mass of each plant/g	Total mass of plants/g
5	7.0	35
10	6.8	68
15	6.2	93
20	4.4	88
25	3.2	80
30	2.0	

(a) Complete the table by calculating the total mass when there were 30 seedlings in the pot. [1]

(b) On the grid below, plot and draw a **line** graph of **average** mass against number of seedlings in the pot.



[3]

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(c) Explain fully why the average mass of plants decreases as the number of seedlings in the pot increases.

_____

_____

_____

_____ [2]

(d) Describe fully the trend between the number of seedlings in a pot and the **total** mass of the plants in the pot.

_____

_____

_____

_____ [2]

(e) Suggest what would happen to the plants if there were 50 seedlings in a pot.

_____

_____ [1]

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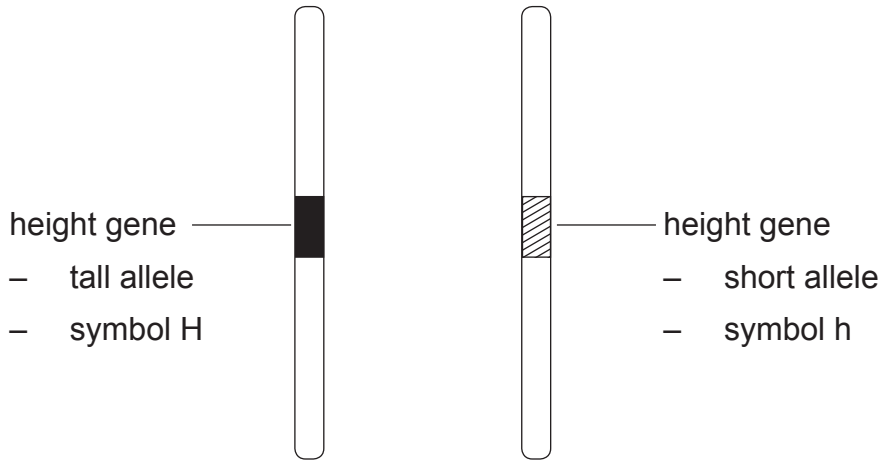
6 The diagram below represents a pair of chromosomes showing the genes for height in a pea plant.



One chromosome carries the allele for tall (H) and the other the allele for short (h). The allele H is dominant to the allele h.

(a) In terms of height:

- what is the genotype of the pea plant shown above?

  _____

- what is the phenotype of this plant?

  _____ [2]

(b) Name the term used to describe two different alleles for one gene on a pair of chromosomes.

Choose from:

heterozygous **dominant** **homozygous**

_____ [1]

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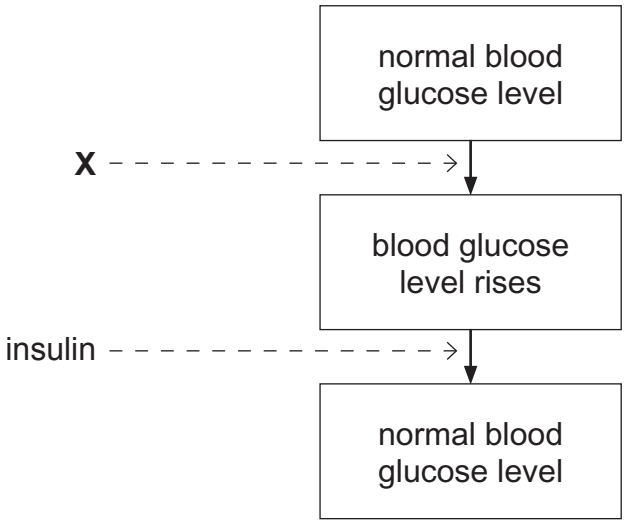
7 **(a)** The flow diagram below summarises the action of insulin in a person.



(i) Explain fully what this person must have done at **X**.

_____

_____

_____ [2]

(ii) Complete the following sentences about insulin.

Insulin changes glucose into _____.

This is then stored by the body in the _____. [2]

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(b) People with Type 1 diabetes have to inject themselves with insulin every day for life. They are advised to take regular exercise and eat a balanced diet.

They have to monitor their blood glucose regularly using special instruments so they know how much insulin to inject.

People who have had diabetes for many years or those who have not controlled their blood glucose well are at risk of complications.

Around 10% of the NHS budget is spent on diabetes.

(i) Using the information provided and your knowledge, suggest **two** reasons why the treatment of diabetes is so expensive.

1. _____

2. _____ [2]

(ii) State **one** long-term effect (complication) of diabetes.

_____ [1]

(iii) Give **one** difference between Type 1 and Type 2 diabetes.

_____

_____ [1]

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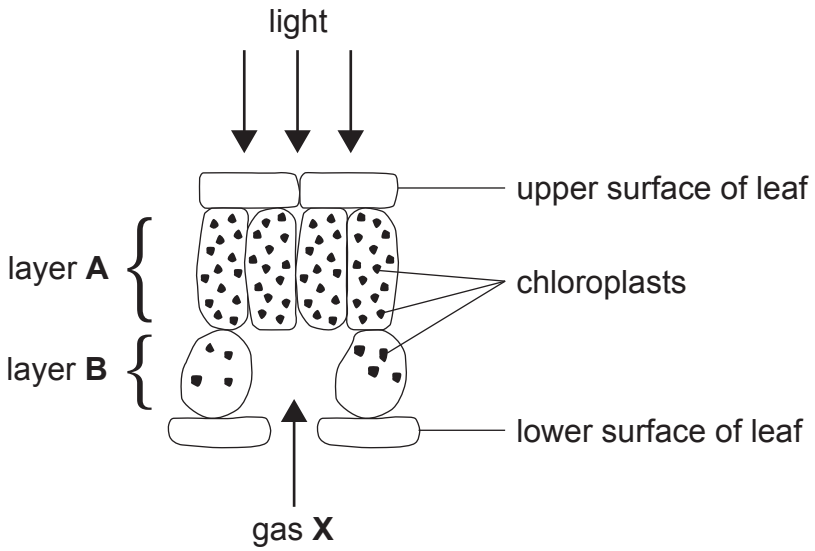
8 **(a)** The diagram below represents a section through a plant leaf during the day. Photosynthesis takes place in chloroplasts.



(i) Using the information given, suggest **two** reasons why more photosynthesis takes place in layer **A** than layer **B**.

1. _____

2. _____ [2]

(ii) Name the gas labelled **X** that is used in photosynthesis.

_____ [1]

(b) Name the **two** products of photosynthesis.

1. _____

2. _____ [2]

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9 **(a)** Vaccinations involve injecting dead or modified microorganisms into people. Normally the vaccination makes individuals immune to the disease that the microorganism causes.

(i) Why must the microorganisms in the vaccination be dead or modified?

_____

_____ [1]

(ii) Explain fully how a vaccination helps provide immunity.

_____

_____

_____

_____

_____

_____ [3]

(b) Colds and flu are caused by viruses. There are many different types of flu and cold viruses. Catching the flu can make people feel very unwell whereas a cold usually has much less of an effect. Elderly people and people with conditions such as diabetes are offered a flu vaccination each year.

(i) Suggest why elderly people are offered a flu vaccination each year.

_____

_____ [1]

(ii) Use the information provided to suggest **one** reason why a vaccination to protect against colds has not been developed.

_____

_____ [1]

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(c) In 2012–13 there was a measles epidemic in Swansea in Wales.

A number of years before this epidemic, parents in Swansea were very worried about their children getting the MMR vaccination due to local newspaper stories about the vaccination.

As a result of this scare only 67.5% of the children in the Swansea area had the MMR vaccination, a lot less than in other areas.

(i) Why were people worried about getting the MMR vaccination?

_____

_____ [1]

(ii) Using the information provided, explain fully why the epidemic of measles occurred in the Swansea area.

_____

_____

_____

_____ [2]

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10 The year 2016 was the warmest year on record for planet Earth. Explain why the Earth's atmosphere has warmed over the last 200 years.

Your answer should include:

- **two** ways in which humans have caused this temperature rise
- **one** way to reduce the rate of temperature rise
- **one** abiotic factor that can be used to monitor the effects of temperature rise

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

[6]

THIS IS THE END OF THE QUESTION PAPER

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