AQA GCSE Biology | 8461

SPECIFICATION POINT 4.3.3.1

Detection and identification of plant diseases

Past-paper questions

Tier	**Foundation**
Question groups	**3**
Available paper years	**2010–2023**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

4.3.3.1 Detection and identification of plant diseases

Question 01

January 2019 | BLY2F | Original Q4 | Legacy

4 Plants need mineral ions for healthy growth.

4 (a) Which part of a plant takes in mineral ions?

Tick (✓) **one** box.

Flower ☐

Leaf ☐

Root ☐

(1 mark)

4 (b) Leaves are usually green.

4 (b) (i) What is the green substance in leaves?

Draw a ring around your answer.

chlorophyll **glucose** **starch**

(1 mark)

4 (b) (ii) The green substance in leaves is important to plants.

Explain why.

.....

.....

.....

.....

(2 marks)

4.3.3.1 Detection and identification of plant diseases

Question 01 · continued

for mark

4 (c) A shortage of mineral ions can affect a plant.

Draw **one** line from each mineral ion to the effect of its shortage.

Mineral ion	Effect of its shortage
Magnesium	Yellow leaves
Nitrate	Stunted growth
	White flowers

(2 marks)

6

4.3.3.1 Detection and identification of plant diseases

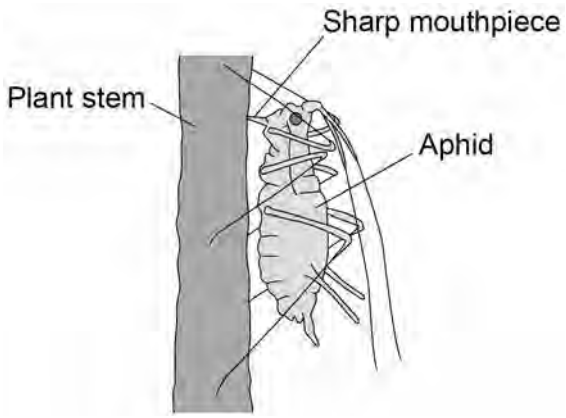
Question 02

June 2018 | 8461/1F | Original Q5

0 5 Aphids are small insects that carry pathogens.

Figure 7 shows an aphid feeding from a plant stem.

Figure 7



0 5 . 1 An aphid feeds by inserting its sharp mouthpiece into the stem of a plant.

After feeding, the mouthpiece of an aphid contains a high concentration of dissolved sugars.

Which part of the plant was the aphid feeding from?

[1 mark]

Tick **one** box.

- Palisade layer ☐
- Phloem ☐
- Stomata ☐
- Xylem ☐

4.3.3.1 Detection and identification of plant diseases

Question 02 · continued

0 5 . 2 What is the process that transports dissolved sugars around a plant?

[1 mark]

Tick **one** box.

- Filtration ☐
- Respiration ☐
- Translocation ☐
- Transpiration ☐

0 5 . 3 Plants infected with aphids have stunted growth.

Explain **one** way the removal of dissolved sugars from the stem of the plant causes stunted growth.

[2 marks]

0 5 . 4 Most aphids do not have wings when they hatch. After several generations, some aphids hatch which have wings and can fly.

Explain the advantage to the aphid of being able to fly.

[2 marks]

4.3.3.1 Detection and identification of plant diseases

Question 02 · continued

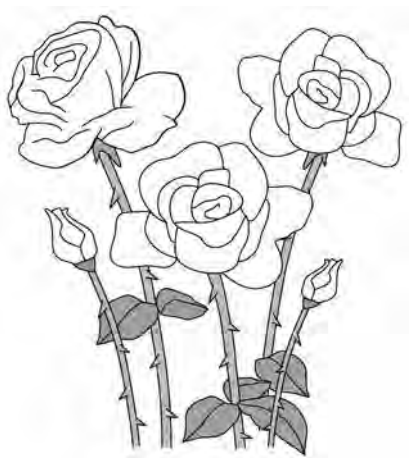
0 5 . 5 The leaves of some plants release oils onto their surface.

Suggest how the production of oil on the surface of a leaf may protect the plant from aphids.

[1 mark]

Figure 8 shows part of a rose plant.

Figure 8



0 5 . 6 Give **one** adaptation shown in **Figure 8** that helps the rose plant defend itself.

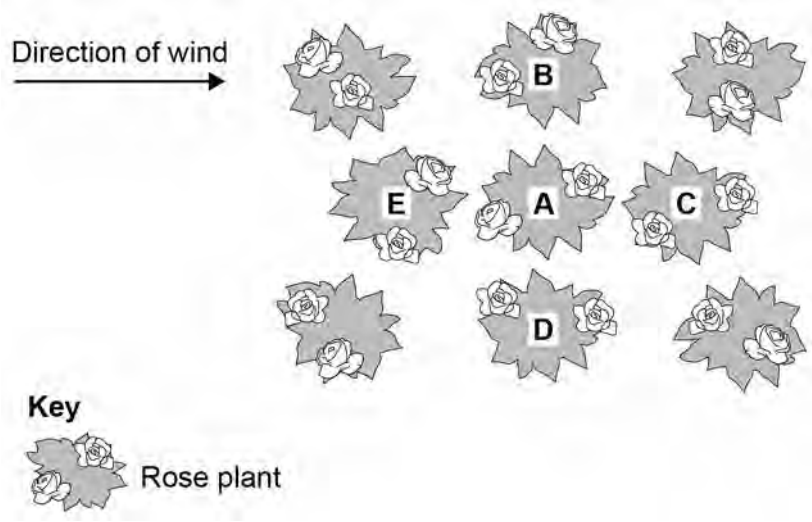
[1 mark]

4.3.3.1 Detection and identification of plant diseases

Question 02 · continued

Figure 9 shows a plan of a garden containing rose plants.

Figure 9



0 5 . 7 Plant **A** has the fungal disease rose black spot.

Which plant in **Figure 9** is the fungus likely to spread to first?

Give a reason for your answer.

[2 marks]

Plant _____

Reason _____

0 5 . 8 Suggest **one** way the gardener could reduce the spread of rose black spot to the other plants in the garden.

[1 mark]

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4.3.3.1 Detection and identification of plant diseases

Question 03

June 2023 | 8461/1F | Original Q6

0 6 A root is a plant organ.

Plant roots contain many different types of tissue.

0 6 . 1 What is a tissue?

[1 mark]

0 6 . 2 Tissue in the tip of a plant root contains stem cells.

Stem cells can differentiate into any type of cell.

Name the type of tissue in plants that contains stem cells.

[1 mark]

In the past many drugs were extracted from plants.

0 6 . 3 Aspirin is a painkiller.

Which plant does aspirin originate from?

[1 mark]

Question 6 continues on the next page

4.3.3.1 Detection and identification of plant diseases

Question 03 · continued

Scientists have extracted chemical **A** from the deadly nightshade plant.

Chemical **A** can be used as a painkiller.

Table 5 shows information about where chemical **A** is found.

Table 5

Part of deadly nightshade plant	Mass of chemical A in 100 g of plant tissue in grams
Roots	1.3
Leaves	1.2
Berries	0.7

0 6 . 4 The scientists usually extract chemical **A** from the berries of the deadly nightshade plant.

Suggest **one** reason why berries are used instead of leaves or roots.

[1 mark]

4.3.3.1 Detection and identification of plant diseases

Question 03 · continued

A deadly nightshade plant has chlorosis (yellow leaves).

The mass of chemical **A** found in the **leaves** of the plant is 60% of the mass shown in **Table 5**.

0 6 . 5 Calculate the mass of chemical **A** in 200 g of the **leaves** with chlorosis.

Give your answer in mg.

[4 marks]

Mass of chemical **A** = _____ mg

0 6 . 6 Suggest **one** reason why the leaves of the deadly nightshade plant have chlorosis.

[1 mark]

Question 6 continues on the next page

4.3.3.1 Detection and identification of plant diseases

Question 03 · continued

Chemical **A** has **not** been tested in large-scale clinical trials in the UK.

0 6 . 7 It is important for drugs to be tested in clinical trials before the drugs are approved for use by the public.

Give **two** reasons why.

[2 marks]

1 _____

_____

2 _____

_____

There are many online reports making claims about the effects of chemical **A**.

Some of these reports are biased.

0 6 . 8 Suggest **one** reason why a report making claims about the effects of chemical **A** may be biased.

[1 mark]

_____

_____

4.3.3.1 Detection and identification of plant diseases

Question 03 · continued

0 6 . 9 How can scientists be sure that claims about new drugs are valid?

[1 mark]

Tick (✓) **one** box.

- Advertise the claims on social media. ☐
- Ask an international company to produce the drug. ☐
- Have the claims peer reviewed. ☐
- Publish the claims in a newspaper. ☐

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Turn over for the next question