



QUESTION WORKBOOK

Plant disease and plant defences

Pathogens, disease and immunity · Unit B11

AQA not examined as a topic · OCR A 4.1.1, 5.1.5 · Edexcel A not examined as a topic
CAIE 15.2

15 questions · 49 marks

NAVY SCREEN EDITION

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SECTION A · Short, 1 to 2 marks**A1**

PDP-Q7

State the type of pathogen that causes ring rot of potatoes, and state how tobacco mosaic virus travels from plant to plant. [2]

A2

PDP-Q15

State what action is legally required when an outbreak of ring rot is confirmed on a UK farm, and state why symptomless tubers make this disease difficult to control. [2]

SECTION B · Standard, 3 to 5 marks**B1**

PDP-Q1

A grower has ring rot in one field of potatoes and mosaic mottling in a glasshouse of tomatoes nearby. Suggest what should be done in each case, and suggest why no treatment can be offered to the infected plants themselves. [5]

B2

PDP-Q2

Describe how a plant contains an infection once a pathogen has entered a leaf, naming the two materials it deposits.

[4]

B3

PDP-Q3

Outline the defences a plant uses against herbivores, referring to alkaloids, tannins and volatile signals in your answer.

[4]

B4

PDP-Q4

Explain why a Venus flytrap closes only after two touches within about thirty seconds, and explain why about five action potentials are needed before it begins to digest.

[4]

B5 Describe how touching a leaf of *Mimosa pudica* causes its leaflets to fold together within a second or two. [4]
PDP-Q8

B6 Compare the defences a plant has against a pathogen with the defences a mammal has. [3]
PDP-Q5

B7 Explain why a plant can secrete a chitinase without digesting its own tissues, and name one plant compound that acts against bacteria. [3]
PDP-Q6

B8 Explain why the leaves of a tobacco plant infected with tobacco mosaic virus show a mottled loss of colour, and explain the effect this has on the plant's growth. [3]
PDP-Q9

B9 Sealing the sieve plates of the phloem with callose helps to contain a viral infection, but it also has a cost to the plant. Explain what this cost is. [3]
PDP-Q10

B10 A tree can lose a whole branch to lignified, walled-off infected tissue and survive, whereas similar damage to an animal's one heart would be fatal. Suggest why a plant can survive this kind of local tissue loss more easily than an animal could. [3]
PDP-Q11

B11 Compare an insect repellent produced by a plant with an insecticide produced by a plant, giving a named example of each and stating when each acts. [3]
PDP-Q12

B12 Many human medicines, including quinine and morphine, were first isolated from chemical defences that plants use against herbivores or pathogens. Suggest one argument this provides for conserving plant diversity. [3]
PDP-Q13

B13

PDP-Q14

The Venus flytrap grows in bogs where the soil is very poor in nitrogen compounds. Explain why the plant catches and digests insects, and explain why this is not classed as a defence against a pathogen or a herbivore. [3]

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