

Plant disease: practice questions

4 questions • 12 marks • mark scheme at the back

For AQA GCSE Biology 8461 and Combined Science: Trilogy 8464. **Triple only** is not in Combined Science. **Higher tier** is only on the Higher paper.

Name

Total / 12

1 **Triple only** **Higher tier** [3 marks]

A gardener notices spots on the leaves of a plant and some stunted growth. (a) State one other sign that a plant may have a disease. (1) (b) Describe two ways the gardener could identify the disease. (2)

2 **Triple only** [2 marks]

A farmer finds that a crop shows stunted growth. A soil test shows a lack of nitrate ions. Explain why a lack of nitrate ions causes stunted growth.

3 **Triple only** [1 mark]

A plant has yellow leaves because it cannot make enough chlorophyll. Which ion is lacking?

- A. ☐ Sodium
- B. ☐ Magnesium
- C. ☐ Calcium
- D. ☐ Phosphate

Describe how plants defend themselves against pathogens and against being eaten by animals.

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Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [3] Triple only Higher tier

- any one from: areas of decay (rot) / growths / malformed stems or leaves / discolouration / presence of pests (1)
- reference to a gardening manual or website (1)
- taking the plant to a laboratory to identify the pathogen (1)
- using a testing kit containing monoclonal antibodies (1)
- Max 3 (award (b) for any two)

2. [2] Triple only

- nitrate ions are needed for protein synthesis (1)
- less protein made, so less growth (1) allow fewer new cells made

3. [1] Triple only

B B (1) (chlorosis is caused by magnesium deficiency)

4. [6] Triple only

Level 3 5-6	A clear, detailed description of physical, chemical and mechanical defences, with correct examples of each and the purpose of each stated (resisting invasion by microorganisms or deterring animals).
Level 2 3-4	A description of at least two types of defence with some correct examples, but limited detail about their purpose.
Level 1 1-2	One or two simple examples of plant defences with little or no explanation.

Indicative content

- physical: cellulose cell walls, tough waxy cuticle on leaves, layers of dead cells around stems (bark) which fall off
- these resist invasion of microorganisms
- chemical: antibacterial chemicals; poisons to deter herbivores
- mechanical: thorns and hairs deter animals
- leaves that droop or curl when touched
- mimicry to trick animals