



Excluding examiner comments

RHS Level 2 Certificate in Plant Growth and Development

UNIT 1

Thursday 1 February 2024

09:30 - 11:30

Candidate Name:

Candidate Number:

Centre Name:

Instructions

This paper contains three sections which may be answered in any order. Candidates should answer:

- **Section A** – all questions (20 marks)
- **Section B** – all questions (50 marks)
- **Section C** – only **TWO** from **FOUR** questions (30 marks).

Place a cross (X) in the box identifying the two Section C questions you have answered.

C 1	C 2	C 3	C 4
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Please note:

- The duration of this paper is **120** minutes.
- Write all answers legibly in the spaces provided and use black or blue ink only.
- Use **METRIC** measurements only.
- Where plant names are required, they should include genus, species and where appropriate, cultivar.
- Where a question requires a specific number of answers, only the first answers given will be marked regardless of the number of answers offered.

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RHS Level 2 Certificate in Plant Growth and Development - UNIT 1

Candidate Name:

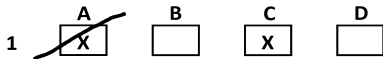
Centre Name:

Candidate Number:

SECTION A
RESPONSE GRID

Instructions

Place a cross (X) in the box you believe is the correct answer. If you make a mistake, score through the box and place a cross in the correct box as follows:



Question	Answer			
	A	B	C	D
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Section A

Answer all questions in this section.
This section is worth 20 marks and each question is worth 1 mark.

Question 1



Which of the following plant processes will be most impacted by the pathogen shown in the picture?

- a) Photosynthesis
- b) Respiration
- c) Transpiration
- d) Osmosis.

Question 2

Which of these statements about green manures is correct?

- a) Green manures are catch crops and so must have a short life-cycle
- b) All green manure plants fix nitrogen from the air in their root nodules
- c) The roots of green manure plants absorb nutrients, preventing leaching
- d) All green manures are inconsistent with minimal cultivation systems.

please turn over.....

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Question 3

Any unwanted physical, verbal, or nonverbal conduct that has the purpose or effect of violating a person's dignity or creating an intimidating, hostile, degrading, humiliating, or offensive environment is known as:

- a) Harassment
- b) Victimization
- c) Discrimination
- d) Tokenism.

Question 4

Which of the following terms describes the leaf shape shown below?



- a) Simple
- b) Compound
- c) Pinnate
- d) Lanceolate.

please see over.....

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Question 5

The sentence below appears in a botany textbook:

“This can be described as: the movement of water from an area of higher concentration to an area of lower concentration through a selectively permeable membrane.”

Which process is being described?

- a) Diffusion
- b) Transpiration
- c) Osmosis
- d) Hydrotropism.

Question 6

Is the following statement correct or incorrect:

*A **WEST**-facing garden border will receive the maximum amount of direct sunlight in the morning until midday during summer.*

Question 7

Which of the following statements is the correct definition of the process of pollination?

- a) The transfer of pollen from the filament to the stigma
- b) The transfer of pollen from the anther to the ovule
- c) The transfer of pollen from the anther to the stigma
- d) The transfer of pollen from the filament to the ovule.

please turn over.....

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Question 8

Loam can be used as a constituent of growing media.

Loam can be defined as:

- a) a man-made soil, which is therefore free of sand, silt and clay particles
- b) soil formed by rivers breaking their banks and depositing silt particles
- c) soil which consists of roughly equal proportions of sand, silt and clay
- d) soil that has been determined to have a weak, unstable structure.

Question 9

Which of the following statements about natural fertiliser teas is correct?

- a) An Environment Agency permit is required to make natural fertiliser teas
- b) Natural fertiliser teas do not need to be diluted and can be used fresh
- c) Deep-rooted plants like comfrey are used to make natural fertiliser teas
- d) Once produced, natural fertiliser teas must be used within 24 hours.

Question 10

Eutrophication can be caused by:

- a) the contamination of edible crops with raw sewage during floods
- b) the use of minimal cultivation techniques increasing soil drainage
- c) insufficient irrigation of plants during periods of prolonged drought
- d) excessive use of modern synthetic fertilisers near watercourses.

Question 11

Which of the following lists contain only plant micronutrients?

a)	Boron Magnesium Molybdenum	c)	Iron Manganese Molybdenum
b)	Boron Iron Sulphur	d)	Boron Iron Calcium

please see over.....

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Question 12

Which of the following statements describes the correct technique when planting container grown trees and shrubs?

The planting hole should be:

- a) 25% wider, and twice as deep as the rootball
- b) 25% wider, and the same depth as the rootball
- c) 50% wider, and twice as deep as the rootball
- d) 50% wider, and the same depth as the rootball.

Question 13

A disease that must be reported to the relevant local authority is classified by the Department for Environment, Food & Rural Affairs as a:

- a) Sustainable disease
- b) Notifiable disease
- c) Advisable disease
- d) Verifiable disease.

Question 14

Climate change is leading to increased night temperatures. Some studies suggest these threaten the survival of vulnerable plant species.

What threat do higher night temperatures pose to vulnerable plant species?

- a) They increase respiration which uses more carbohydrate than is produced by photosynthesis
- b) They increase transpiration, which uses more water than is taken up by the root
- c) They reduce respiration, which results in a toxic build-up of photosynthetic products in the plant
- d) They reduce photosynthesis during the day as the plant did not cool during the night.

please turn over.....

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Question 15

The image below shows a gardener staking evergreen rootballed trees.



What is the main advantage of this method of staking?

- a) It reduces the number of tree ties required
- b) It prevents people from walking into the tree
- c) It reduces the risk of damage to the rootball
- d) It prevents the wooden stake from rotting.

Question 16

Which of the following statements could be found on a risk assessment carried out for volunteers maintaining planted areas in a heritage garden?

- a) Every person working in the garden must receive training on how to use hand tools
- b) Every person working in the garden should be made to feel equally welcome and included
- c) Every person working in the garden must have access to all garden borders
- d) Every person working in the garden must wear the uniform issued during induction.

please see over.....

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Question 17

Temperature, wind, water and oxygen levels are all examples of:

- a) Biotic conditions
- b) Climate conditions
- c) Abiotic conditions
- d) Nutrient conditions.

Question 18

This question relates to the import of plants into the UK. Regulated plants can require a Phytosanitary Certificate. These Certificates are issued by which of the following:

- a) The importer of the regulated plant species
- b) The supplier's original country of origin
- c) The UK Animal and Plant Health Agency
- d) The Department for Environment and Rural Affairs.

Question 19

Which of the following statements is correct?

- a) A Garden Health Plan is a holistic approach to manage plant health
- b) A Garden Health Plan is the same as Integrated Pest Management
- c) A Garden Health Plan only focuses on plant diseases and pathogens
- d) A Garden Health Plan only focuses on insect and non-insect pests.

Question 20

Which piece of UK legislation specifically states that an employer must provide steel toe-capped boots to an employee if there is a workplace risk to the employee's feet?

- a) Manual Handling Operations Regulations 1992.
- b) Control of Substances Hazardous to Health (COSHH) 2002.
- c) Management of Health and Safety at Work Regulations 1999.
- d) Personal Protective Equipment at Work Regulations 1992.

End of section A.
Please continue to Section B.

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Section B

Answer all questions in this section.
This section is worth 50 marks.

Question 1 (5 marks)

This question relates to the historic use of peat in horticulture.

- a) State **TWO** horticultural characteristics of peat that made it suitable for use in growing media.

MARKS

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- b) State **THREE** reasons why peat is being banned as a constituent of growing media.

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Question 2 (8 marks)

MARKS

This question relates to the role of soil organic matter in allowing soil to become more resilient to climate change. Complete the table below.

(Note: We have already completed part of this table to indicate the level of detail required).

Role of soil organic matter	Impact on making the soil climate resilient
Organic matter helps to build a strong crumb structure in the soil.	1. <i>Strong soil crumbs are resistant to wind erosion after periods of drought.</i>
	2.
	3.
Organic matter helps the soil to absorb and retain water	1. <i>Soils that absorb water are more resilient and less likely to suffer from water collecting on the surface.</i>
	2.
	3.

2

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Total Mark

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Question 3 (9 marks)

MARKS

This question relates to the impact that the three major plant nutrients Nitrogen, Phosphorus and Potassium (NPK) have on plant health.

Complete the table below.

Nutrient	Role in promoting plant health (2 marks)	Symptom of deficiency (1 mark)
Nitrogen (N)		
Phosphorus (P)		
Potassium (K)		

3

3

3

Total Mark

Candidate name

Candidate number

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Question 4 (6 marks)

The concept of Best Practice can be defined as the adoption of the results of horticultural trials, research and concepts by professional bodies and networks.

- a) Name **TWO** organisations that either conduct trials, or carry out horticultural research and development.

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- b) Explain how Best Practice can be adopted in named horticultural operations, by completing the table below.

Named horticultural operation	Example of Best Practice
1.	1.
2.	2.

2

2

2

Total Mark

MARKS

Question 5 (6 marks)

a) What is meant by the term F₁ Hybrid

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b) State **TWO** advantages of using F₁ Hybrids.

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c) State **TWO** disadvantages of using F₁ hybrids.

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Question 6 (6 marks)

This question relates to the vascular system within plants.
Complete the table below.

Name the two types of vascular tissue found in plants	Describe the function of this tissue.
1.	
	How are the cells in this tissue adapted to perform this function?
2.	How does the structure of this tissue differ from tissue 1?
	How does this structure aid plant growth and development?

2

1

2

1

Total Mark

Candidate name

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Question 7 (10 marks)

MARKS

This question relates to the importance of microclimates and provenance (geographic location of the parent plant material) when creating plantings in gardens.

a) Explain the term microclimate.

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b) Discuss **THREE** external factors that can influence the creation of microclimates in a garden.

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c) Explain how the provenance of the plants you source could affect their successful establishment.

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End of section B.

Please continue to Section C.

Candidate name

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Section C

There are **FOUR** questions in this Section. You must only answer **TWO** questions.

Please write your answers on the following pages.

Each question is worth 15 marks. This section is worth 30 marks.

NOTE:

You **MUST** indicate which question you are answering by placing a cross in the appropriate box on the **FRONT** of this exam paper.

please turn over.....

Candidate name

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Question C1

A friend wishes to re-landscape their garden. They want to use a range of ericaceous plants. A recent soil test indicated that their soil was pH 7.5.

Discuss the range of options that are available to your friend, and the sustainability principles that could be appropriate to this scenario.

15 marks

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Question C3

The adoption of Best Practice and the development of sustainable horticultural practices has radically changed many horticultural processes.

Describe current Best Practice as it relates to tree and shrub planting. How does the adoption of Best Practice benefit plant establishment?

15 marks

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Question C4

Describe the process of transpiration in plants. Suggest a range of factors that can influence the process of transpiration. Discuss how these factors can be managed in a garden situation.

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