



RHS Level 2 Certificate in Plant Growth and Development

UNIT 1

Monday 16 October 2023

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
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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:

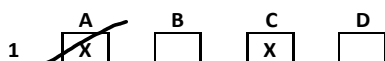
Centre Name:

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
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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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

The piece of legislation that specifically covers moving *sacks of growing media (to include lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or bodily force* is known as the:

- a) Health and Safety at Work Act 1974
- b) Control of Substances Hazardous to Health
- c) The Working at Height Regulations
- d) Manual Handling Operations Regulations.

Question 2

The legislation identified in Question 1 sets out three actions that should be taken to minimise the risk of injury when moving sacks of compost, or other similar loads.

Which of the following lists is in the correct order?

a)	1. Avoid the handling 2. Reduce the risk of injury 3. Assess the risk of handling that cannot be avoided	b)	1. Assess the risk of handling that cannot be avoided 2. Reduce the risk of injury 3. Avoid the handling
c)	1. Reduce the risk of injury 2. Avoid the handling 3. Assess the risk of handling that cannot be avoided	d)	1. Avoid the handling 2. Assess the risk of handling that cannot be avoided 3. Reduce the risk of injury

Question 3

What does the x signify in the plant name: *Erica x darleyensis*?

- a) The plant is a cross between two genera from the same family.
- b) The plant is a cross between two species from the same genus.
- c) The plant is a cross between two cultivars in the same species.
- d) The plant is a cross between two families in the same order.

please turn over.....

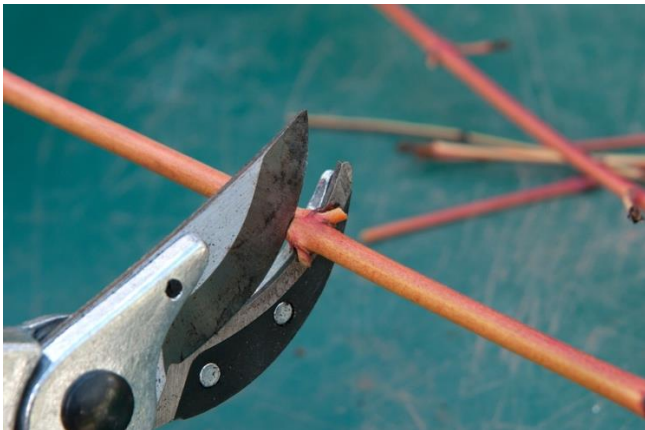
Question 4



Which of the following taxonomic groups does moss belong to?

- a) Angiosperms
- b) Gymnosperms
- c) Pteridophytes
- d) Bryophytes.

Question 5



Where is this pruning cut being made?

- a) Margin
- b) Node
- c) Internode
- d) Lenticel.

please see over.....

Question 6

Which part of the leaf allows gaseous exchange to take place?

- a) Xylem
- b) Phloem
- c) Petiole
- d) Stomata.

Question 7



Which nutrient deficiency is shown in the leaf above?

- a) Molybdenum deficiency
- b) Magnesium deficiency
- c) Phosphorous deficiency
- d) Boron deficiency.

please turn over.....

Question 8

Acetic acid (horticultural vinegars) are used as sustainable forms of weed control.

What is their mode of action?

- a) They alter the pH of the soil making it unsuitable for the weed.
- b) They dissolve the chloroplasts and prevent photosynthesis.
- c) They burn through the waxy covering or cuticle of the leaf.
- d) They travel through phloem vessels in the plant to kill its roots.

Question 9

A handbook for the control of plant pests contains the following statement:

'the reproductive rate of the organism'

Which of the following technical terms matches the statement?

- a) Fecundity
- b) Resilience
- c) Biodiversity
- d) Symbiosis.

Question 10

This question is about the management of plant health.

What does IPM stand for?

- a) Initiated Pest Management
- b) Informed Pest Management
- c) Integrated Pest Management
- d) Inclusive Pest Management.

Question 11

Which plant nutrient is responsible for the following functions in plants?

- Cell wall formation
- Movement of sugars
- Making calcium available to the plant
- Pollination and seed set.

- a) Boron
- b) Iron
- c) Manganese
- d) Molybdenum.

Question 12

At what pH are most nutrients available to most plants?

- a) pH 6.5
- b) pH 4.5
- c) pH 8.5
- d) pH 3.5

Question 13

The main advantage of using biochar is:

- a) that it has almost no negative environmental impact
- b) that it breaks down to release nutrients into the soil
- c) that it acts as a conduit for air, water and nutrients
- d) that it reduces the reliance of mycorrhizal fungi.

Question 14

A horticultural textbook states:

'The arrangement of the natural and artificial physical features of the greater area in which the garden sits.'

Which of the following terms matches the statement?

- a) Aspect
- b) Latitude
- c) Topography
- d) Exposure.

Question 15

A site for planting records minimum temperatures of -20C.

Plants selected for long term plantings should have an RHS Hardiness Rating of:

- a) H7
- b) H5
- c) H3
- d) H1

Question 16

Best practice has changed over recent years to suggest that organic matter should not be used when planting trees. Why?

- a) When organic matter is added to a soil it increases drainage, which can cause water stress to the plant.
- b) When organic matter is added to the soil it encourages worms, which taken from other garden areas.
- c) When organic matter decomposes the ground sinks resulting in the plant being at an incorrect depth.
- d) When organic matter is added to the soil this can spread legionnaires disease to the garden.

Please see over.....

Question 17

Which statement best describes transpiration pull?

- a) Water moves in the phloem towards the leaves.
- b) Water moves in the xylem towards the leaves.
- c) Water moves by cohesion and adhesion to the leaves.
- d) Water moves by capillary action towards the leaves.

Question 18



Using your knowledge of current thinking with regards to planting, select the most likely explanation for the image above.

- a) A plastic protector is being applied to reduce vandalism.
- b) A tree support is being applied to replace staking.
- c) A tree irrigation bag is being used to supply water.
- d) A plastic protector is being applied to prevent mowing damage.

please turn over.....

Question 19

What is the correct botanical description for the flower illustrated?



(*Buddleja* 'Berries and Cream')

- a) Spikes of tubular flowers.
- b) Panicles of tubular flowers.
- c) Umbels of tubular flowers.
- d) Bracts of tubular flowers.

Question 20

The designation AGM within a plant name stands for:

- a) Award of Garden Merit
- b) Awarded Garden Medal
- c) Awarded Growers Medallion
- d) Award of Growers Merit.

End of section A.

Please see over to continue to Section B.





Section B

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

Question 1 (6 marks)

This question is about safety signs used within horticultural settings.

Please complete the table below.

Example of sign seen in a horticultural setting	Type or Category of sign	Action required
		
	Prohibition Sign	
		
		Eye protection must be worn

MARKS

2

1

2

1

please turn over.....

Total Mark

Question 2 (8 marks)

MARKS

This question relates to the tissues found within a Eudicotyledonous plant stem.

Complete the table shown below:

Tissue	Characteristic	Arrangement	Function
Xylem			
		Outermost layer of cells	Protection from external environment
Phloem			

3

2

3

please see over.....

Total Mark

Question 3 (9 marks)

MARKS

State how **THREE** distinct abiotic factors can impact on plant health, using **NAMED** plant examples.

Abiotic factor 1

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1

Impact on plant health:

.....

1

.....

Named plant example:

.....

1

Abiotic factor 2

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1

Impact on plant health:

.....

1

.....

Named plant example:

.....

1

Abiotic factor 3

.....

1

Impact on plant health:

.....

1

.....

Named plant example:

.....

1

please turn over.....

Question 4 (9 marks)

a) Insert the words contained in the list below, into the gaps in the text:

4

- aggregate
- humus
- peds/crumbs
- soil organisms

When organic matter is added to the soil, there is an increase in the number of _____, as this acts as a food source.

The organic matter is therefore broken down to become _____.

This material allows soil particles to _____ and become _____ .

b) Describe **TWO** positive impacts on plant growth of the process stated in a).

4

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c) What is the technical term for the relative proportion of sand, silt and clay particles in the soil?

1

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Total Mark

please see over.....

Question 5 (6 marks)

Describe the carbon cycle.

6

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please turn over.....

Total Mark

MARKS

Question 6 (6 marks)

a) Describe the characteristics of a growing media suitable for the cultivation of orchids.

3

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b) List **THREE** bulk ingredients used in the production of orchid composts.

1

1

1

2

1

3

please see over.....

Total Mark

Question 7 (6 marks)

This question relates to the delivery of plants for planting in a garden setting.

Using the table below, list **THREE** distinct indicators of poor plant quality, stating the plant health impact of each.

Indicator of poor plant quality	Plant health impact

MARKS

2

2

2

End of section B.

Please turn over and continue to Section C.

Total Mark

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.

Question C1 (15 marks)

Explain how the internal and external structures of leaves, stems and roots enable respiration to take place.

How does this knowledge impact on horticultural practice?

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How does this knowledge impact on horticultural practice?

Total Mark

Question C2 (15 marks)

Explain the concept of biosecurity using the following headings:

- Basic principles
- Application of these principles
- Examples of Best Practice from **NAMED** horticultural settings.

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- Question C2 (15 marks)**
- Explain the concept of biosecurity using the following headings:
- Basic principles
 - Application of these principles
 - Examples of Best Practice from **NAMED** horticultural settings.

Total Mark

Question C3 (15 marks)

Discuss the role of fertilisers in horticulture with specific reference to:

- the impacts on plants of poor nutrition
- the sustainability implications of fertiliser usage.

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 - the impacts on plants of poor nutrition
 - the sustainability implications of fertiliser usage.

Total Mark

Question C4 (15 marks)

Explain how a knowledge of natural habitats can influence plant specification and use within garden settings.

Your answer should make reference to **NAMED** garden settings.

Your answer should make reference to **NAMED** plant examples.

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Total Mark

The Royal Horticultural Society, Wisley, Woking, Surrey GU23 6QB.
Charity Registration Number: 222879/SC038262