



RHS Qualifications

Examination:	RHS Level 2
Unit:	Unit 1
Examination date:	October 2023

General Introductory Comments

RHS Qualifications initiated this additional October examination series, in consultation with RHS Approved Centres, and other stakeholders. The primary objective of the October examination being to provide an opportunity for candidates who were not able to sit the examinations in the February and June series to sit the examination. The October examination also affords candidates who had failed earlier examinations with the opportunity of a resit.

The Examiners' Comments are intended to help candidates and centres to familiarise themselves with both the interpretation of the Qualification Specification and the format and style of the Unit 1 examination.

The Examiners' Comments focus on key areas of strength, but also, and perhaps more importantly, on areas where candidates demonstrated a weaker understanding of Topic areas or where there was evidence of gaps in their knowledge.

Candidates and centres are advised to carefully review these comments to build an understanding of how to gain the maximum number of marks available in future examinations. Candidates who scored high marks in this examination, submitted responses that were technically detailed, that related fully to the requirement of the question, and where appropriate that demonstrate a holistic/integrated knowledge of the 4 Qualification-wide outcomes and the 4 Topic areas.

Candidates are advised, when preparing for examinations to focus on both, areas of strength, (to ensure that they possess an appropriate depth of knowledge), along with identifying areas of weakness (where a more systematic study of the Topic areas may be required).

Overview of Examination

Levels of demand

Questions were set at three levels of demand within this paper.

Questions that require a recall of basic factual knowledge are classified as being **low demand**.

Questions that require the recall of more technical concepts or the application of knowledge are classified as **medium demand**.

Questions that require the recall of advanced technical concepts, the application of these concepts and the integration of these concepts across topics, are classified as **high demand**.

General comments

An analysis of scripts has indicated that strong candidate responses shared many common characteristics:

- planned out their time for Section A, B, and C
- provided responses that demonstrated an accurate reading of the question
- related their responses directly to the command word in the question
- provided responses which had few irrelevancies, or incorrect material
- provided responses with the required level of detail
- used appropriate technical horticultural terminology correctly
- gave full scientific names, when providing plant examples
- gave the appropriate number of responses, e.g. name two...
- successfully applied knowledge to new scenarios and situations
- evidenced planning of responses in long form answers
- integrated their long form responses into a number of relevant Topics, and Qualification-wide outcomes
- Provided responses that were logical, developing coherent arguments.

Candidates and centres are advised to review the above exemplars of good practice as they prepare for future examination series.

Section A

Questions 1 – 20

General comments on Section A

The forced answer questions are designed to test candidate's knowledge and understanding of the concepts covered in the 4 Topics and the 4 Qualification-wide outcomes that make up this unit.

Section B

Each question is considered separately.

Question 1

This question related to the Qualification-wide outcome of Health and Safety.

Candidates were required to complete a table relating to the safety signs that can be found in horticultural settings.

Candidates were required to demonstrate their knowledge of safety signs. Candidates were presented with images representing the four different types/categories of safety sign. Candidates were required to complete a table, stating the type or category of sign, and then to state the action required.

Strong candidate responses correctly identified the type/category of signs using the appropriate technical language:

- information/Emergency escape
- prohibition
- warning
- mandatory.

Strong candidates also correctly stated the action required by the signage. Strong candidate responses included, eye protection must be worn, or no access to unauthorised persons.

Weak candidates were unable to provide the correct type or category of sign, instead describing the sign.

Question 2

This question assessed candidate knowledge relating to the tissues found within a Eudicotyledonous plant stem. Candidates were presented with a partially completed table, and were required to review the information provided, using this along with their knowledge of plant tissues to complete the gaps within the table.

Strong candidate responses correctly stated the characteristics of the three tissue types, for example stating the characteristics of xylem vessels as being, elongated cells, or stating that xylem tissue is dead, with the cells being hollow, and thin resembling drinking straws. Strong candidates stated the position of the xylem cells, as being within the vascular bundle, and stated their function as being the transport of water and mineral nutrients up the plant.

Weak candidate responses often correctly identified the function. These weak responses often left the 'characteristic' and 'arrangement' columns within the table blank or provided incorrect responses. This demonstrated a lack of understanding of these terms identifying gaps in knowledge.

Question 3

This question required candidates to demonstrate their knowledge of abiotic factors that can impact on Plant Health.

Strong candidates were able to correctly name abiotic factors, for example, light levels, wind, relative humidity, and water. The impact of these factors on plant health were discussed, for example the impact of low temperature (frost) causing cell death/the death of soft tissues, or the death of the plant. Strong candidates were also able to give named examples of plants that have been documented to be affected by such an abiotic factor.

Weaker candidates were able to correctly state abiotic factors, however these candidates often either explained the factor, or described the damage without specifically relating their answer to plant health. Weaker candidates often used common, rather than scientific plant names, or suggested inappropriate plant examples, which were not documented to be impacted, from a plant health perspective by the abiotic factor.

Question 4

In part (a) of this question, candidates were presented with 4 technical terms used within horticulture:

- aggregate
- humus
- peds/crumbs
- soil organisms.

Candidates were required to insert these technical terms into a series of gaps in a short paragraph.

Strong candidates were able to insert the appropriate technical term into the appropriate gap, with weaker candidates inserting the technical terms in an inappropriate gap.

In part (b) candidates were asked to describe two positive impacts of the addition of organic matter on plant growth.

Strong candidates related their answer to the statement in (a), for example the development of strong ped structures can enhance drainage, through the removal of gravitational water, increasing the presence of oxygen in the soil, which benefits root respiration and therefore plant growth.

Weaker candidates did not relate their responses to the statement in (a) or discussed soil organic matter, without linking this to plant growth, as required by the question.

In part (c) of the question strong candidates were able to state that the technical term to describe the relative proportions of sand, silt and clay particles in the soil is 'soil texture'. Weak candidates incorrectly stated this to be 'soil structure'.

Question 5

This question required candidates to describe the Carbon cycle.

Strong candidates were able to offer a full description of the Carbon cycle, including:

- Carbon being present in the atmosphere
- Carbon is removed from the atmosphere and locked into plant tissue through the process of photosynthesis
- Carbon is released on the decay of plant tissue
- Carbon is accumulated in the bodies of animals, when they eat plant material
- Carbon is released when animals defecate
- Carbon is released from the burning of fossil fuel.

Some weaker candidates provided responses relating to the Nitrogen cycle, and therefore were not awarded marks. Some candidates discussed climate change, rather than describing the Carbon cycle. Other weaker candidates missed areas from their responses, such as the presence of Carbon in the atmosphere, or the role of photosynthesis in removing Carbon from the atmosphere and locking the carbon into plant tissue. Other weaker responses focussed on the process of photosynthesis, to the exclusion of other points.

Question 6

This question related to the characteristics and bulk ingredients used in orchid growing media.

In part (a) of the question candidates described the characteristics of growing media suitable for orchid cultivation.

Strong candidates correctly described the key characteristics as:

- providing a stable pH for the orchid plants
- having a high Air Filled Porosity to meet the orchids requirement
- should be stable, and able to retain its structure.

Weak candidates gave general answers, rather than specific, technically correct answers.

In part (b) of the question candidates were required to list three bulk ingredients that could be used in the production of orchid composts.

Strong candidates listed appropriate bulk ingredients including:

- coir
- pumice
- bark.

Weaker candidates listed inappropriate bulk ingredients including:

- humus
- sand and Grit
- vermiculite.

Question 7

This question was set in the context of the delivery of plants for planting in a garden setting.

Candidates were asked to list three indicators of poor plant quality.

Strong candidates stated specific indicators of poor plant quality, including:

- being pot bound
- the presence of pests and diseases on the plants
- the presence of perennial weed in the pots.

Weak candidates were often able to list the indicators of poor plant quality, but failed to provide full responses to the second requirement of the question.

The second part of the question required candidates to apply their knowledge of the indicators of poor plant quality to explain the impacts of, for example being pot bound on plant health.

Strong candidates related their responses to the plant health impacts, discussing the impacts of being pot bound on plant establishment, and the nutritional status of the plant. These strong candidates linked their answers to areas such as reduced vigour, reduced rooting, subsequent plant health impacts from reduced water and nutrient uptake, along with the risk of poor stability.

Weaker candidates did not relate their responses to plant health impacts, and therefore did not demonstrate the application of knowledge. Weaker candidates also failed to link the indicator of poor quality with the specific plant health impact. Other candidates described the indicator of poor plant quality, and so did not fulfil the requirement of the question.

Section C

Section C candidate responses are graded against the assessment ladder, which is on the next page of this report. Candidates and centres are advised to review the ladder as this indicates how the assessment decisions are made, when grading long form responses.

Candidate performance in Section C ranges from those candidates who:

- were prepared to produce long form responses
- were taught to logically answer questions
- shared horticultural knowledge that is both relevant to the question and at a good standard of detail

through to candidates who:

- were not prepared for the production of long form responses
- produced responses that were only partially relevant to the question
- provided responses that were lacking in technical content and detail.

In addition to the assessment ladder candidate responses are also reviewed against the criteria set out below:

Indicative content

- Strength of response.
- Integration.
- Horticultural knowledge.

Strength of response:

Strong candidate responses:

- developed a logical argument to answer the question
- drew on reliable information sources
- were relevant to the question
- expressed clarity of thought
- demonstrated knowledge of horticultural practices.

Integration:

Candidate responses should integrate with other relevant areas of the syllabus.

Assessment ladder (for information)

Band	Mark range	Summary	Description
4	12 - 15	Fully developed (Total)	<p>A highly detailed, comprehensive, fully relevant response, addressing all aspects of the question</p> <ul style="list-style-type: none"> <input type="checkbox"/> No irrelevant or incorrect material or observations at the top end of the mark range: otherwise only very minor errors/omissions (which do not detract from an otherwise strong response) <input type="checkbox"/> Full integration/clear links demonstrated with other appropriate topics as required: a holistic approach <input type="checkbox"/> Advanced current professional horticultural knowledge/principles demonstrated (and evidence of advanced material beyond the specification at the top end of mark range) <input type="checkbox"/> Consistent use of correct and appropriate technical language.
3	9 - 11	Mainly developed (Solid)	<p>A reasonably detailed and fairly comprehensive response, with mostly relevant observations, addressing most of the key elements of the question</p> <ul style="list-style-type: none"> <input type="checkbox"/> Some minor evidence of irrelevant or incorrect material or observations (in what is otherwise a good response), with occasional lack of detail/omissions at times <input type="checkbox"/> Secure evidence of some appropriate integration with other topics but some linked topic areas are occasionally overlooked or incorrect associations are made: a partially holistic approach <input type="checkbox"/> Current professional horticultural knowledge/principles demonstrated most of the time, with occasional errors, but largely appropriate explanations and application <input type="checkbox"/> Correct and appropriate technical language demonstrated most of the time, with some minor errors.
2	6 - 8	Rudimentary (Basic)	<p>A largely basic response with some relevant observations, addressing some key elements of the question</p> <ul style="list-style-type: none"> <input type="checkbox"/> Some significant evidence of irrelevant or incorrect material and frequent lack of detail, with some key areas overlooked <input type="checkbox"/> Occasional evidence of correct integration with other topics, but many areas are overlooked and incorrect associations made: little evidence of a holistic approach <input type="checkbox"/> Current professional horticultural knowledge/principles demonstrated some of the time, but with frequent errors, and only basic explanations or application <input type="checkbox"/> Correct and appropriate technical language only partially demonstrated but limited. Some key errors.
1	0 - 5	Undeveloped (Unsatisfactory)	<p>A largely poor response with few relevant observations, addressing few of the key elements of the question</p> <ul style="list-style-type: none"> <input type="checkbox"/> Material is largely irrelevant or incorrect and lacking in any detail, with many key areas overlooked <input type="checkbox"/> No, or very little evidence of correct integration with other topics, with many areas overlooked and incorrect associations made: no evidence of a holistic approach <input type="checkbox"/> No or little evidence of current professional horticultural knowledge/principles demonstrated, with poor or incorrect explanations or application <input type="checkbox"/> Little (if any) technical language demonstrated. Often incorrect. Key errors.

Question 1

This question required candidates to explain how the internal and external structure of leaves, stems and roots enable respiration to take place. Candidates were then asked how this knowledge impacts on horticultural practice to allow for integration with other Topics, and with the Qualification-wide outcomes.

When grading candidates, markers took account of either breadth or depth of knowledge, crediting candidates who gave narrower, but highly detailed answers with the equivalent mark as candidates who discussed a wider range of considerations.

Candidates who scored marks in the higher bands:

- defined respiration
- used appropriate terminology to describe plant physiology
- explained how oxygen is able to enter and move in plant tissues in the root, stem, and leaf
- applied their knowledge of respiration to explain its importance in all plant processes
- discussed the impact on horticultural practice to include:
 - the importance of Air Filled Porosity in growing media
 - the importance of water management in soils (drainage)
 - the depth of planting
 - the importance of air movement within dense plantings to prevent oxygen depletion within protected growing environments
- areas of integration include Best Practice where trials work is implemented by leading gardens to inform their horticultural practices. Examples included depth and position of mulching, and the application of right plant right place to match the plant physiology with the site characteristics.

Candidates who scored marks in the lower bands:

- discussed the process of photosynthesis
- discussed the process of transpiration
- did not relate their answer to plant physiology
- did not discuss the impact of this knowledge on horticultural practices
- did not discuss the role of respiration in the release of energy for all plant processes.

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Question 2

This question was designed to assess candidate's knowledge of biosecurity, both with regard to the basic recall of biosecurity principles, but also with the application of these principles in named horticultural settings.

When grading candidates, markers took account of either breadth or depth of knowledge, crediting candidates who gave narrower, but highly detailed answers with the equivalent mark as candidates who discussed a wider range of considerations.

Candidates who scored marks in the higher bands:

- defined biosecurity
- stated the basic principles of biosecurity, for example:
 - the quarantine of new plant material
 - the training of staff to identify plant health risks
 - having clear reporting procedures
 - the role of high quality plant suppliers in reducing risk
 - the concept of traceability
 - limiting importation of certain plant species from high risk areas
- stated the role of plant importers with regards to biosecurity to include plant passports
- gave appropriate named examples of horticultural settings to the required level of detail
- discussed specific areas of biosecurity policies from named horticultural settings.

Candidates who scored marks in the lower bands:

- confused biosecurity with Integrated Pest Management
- related areas of their answer to EU regulations, rather than reflecting on current legislation
- did not name horticultural settings that exemplify best practice in this area
- related their answers to plant importation only
- did not discuss basic protocols
- did not include training of staff to identify plant health risks

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Question 3

This question related to the role of fertilisers in horticulture, plant nutrition and sustainability with regards to the potential environmental impacts of fertiliser usage.

When grading candidates, markers took account of either breadth or depth of knowledge, crediting candidates who gave narrower, but highly detailed answers with the equivalent mark as candidates who discussed a wider range of considerations.

Candidates who scored marks in the higher bands:

- discussed the usage of fertiliser in horticulture
- identified the difference between organic and inorganic fertilisers
- wrote about the impacts of poor nutrition on plant growth and development
- demonstrated secure knowledge of the environmental impacts of fertiliser usage to include:
 - eutrophication
 - Carbon release from the Haber-Bosch process
- discussed the role of the rhizosphere and the impact of fertiliser on the rhizosphere
- debated the positive and negative impacts of fertilisers to develop a conclusion.

Candidates who scored marks in the lower bands:

- related their answers to the usage of green manures
- stated organic matter is a fertiliser
- did not state in detail the impacts of poor nutrition on plant growth and development
- stated fertilisers are not environmentally friendly, without explaining why they are not environmentally friendly
- wrote answers based on their own knowledge, rather than the requirement of the question.

Question 4

This question required candidates to explain how a knowledge of natural habitats can influence plant specification and use within garden settings.

When grading candidates, markers took account of either breadth or depth of knowledge, crediting candidates who gave narrower, but highly detailed answers with the equivalent mark as candidates who discussed a wider range of considerations.

Candidates who scored marks in the higher bands:

- related their responses to named garden settings
- related their responses to named plant examples
- related their responses to named natural habitats
- related their responses to:
 - the original environment of the plant
 - the characteristics of the plant
 - plant specification
 - plant use in different garden settings
- gave detailed answers with a high level of technical information.

Candidates who scored marks in the lower bands:

- wrote generally about the importance of wildlife in the garden
- wrote about 'right plant, right place' without:
 - naming plants
 - providing technical content
 - discussing purpose
 - explaining how 'right plant, right place' is developed
 - discussing how the original habitat of the plant informs plant selection
- wrote about site amelioration, rather than selecting the right plant for the site
- did not explain how natural habit can influence plant specification.