

RHS Qualifications

Examination:	RHS Level 2
Unit:	Unit 2
Examination date:	October 24

General Introductory Comments

Examiners' comments are produced by RHS Qualifications following each examination series.

The Examiners' comments included in this report are intended to help candidates and centres to develop an understanding of the requirements of the RHS Level 2 examinations. This is achieved through a review of candidate responses indicating key areas of strength, while also considering areas where candidates demonstrated a weaker understanding of Topic areas, or where there was evidence of gaps in their knowledge.

The RHS Level 2 examination papers are designed to assess the contents of the Qualification Specification according to Ofqual's level descriptors.

At Level 2 these state that candidates should:

- possess a knowledge and understanding of facts, procedures and ideas within the field of horticulture
- be able to complete well defined tasks and address straightforward problems
- be aware of a range of information that is relevant to horticulture and demonstrate an ability to interpret relevant information and ideas
- be able to use relevant information to inform actions
- be able to apply their knowledge to a variety of contexts.

Candidates who scored high marks in the October 24 Level 2 examination:

- demonstrated a high level of knowledge and understanding of facts (AO1)
- could apply information and ideas to new contexts (AO2)
- could discuss, and address straightforward problems (AO2)
- could demonstrate holistic/integrated knowledge of the 4 Qualification-wide outcomes and the 4 Topic areas considered in Unit 2.

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:

- used correct horticultural terminology
- provided responses that matched the requirement of the question
- named appropriate horticultural situations
- demonstrated sound knowledge of horticultural practices
- provided correctly formatted scientific plant names
- provided logical arguments
- gave the appropriate number of responses, e.g. name two...

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

- provided responses that did not directly meet the requirement of the question
- provided insufficient detail
- named inappropriate or partially appropriate horticultural situations
- were unable to explain or define terms
- confused fundamental knowledge, or gave vague responses lacking in the required level of detail
- stated common, or incorrect names, when providing plant examples
- provided partial responses in long form answers
- answered more than two Section C questions. In such circumstances the marks of the first two responses are recorded, with additional responses left unmarked.

Qualification Specification and Guidance Document

The Qualification Specification outlines the curriculum that candidates will be examined on. The Guidance Document is freely available from Quartz and RHS Qualifications. This document was developed to provide centres with additional guidance with regards to the interpretation of the Assessment Outcomes in terms of breadth and depth that is appropriate to a Level 2 qualification.

It should be noted that the Guidance Document is not intended to be a comprehensive guide to teaching and learning. Instead, it is designed to provide examples of some of the key areas contained within an Assessment Outcome. As an example, where an Assessment Outcome in the Qualification Specification formally lists 5 areas that should be included, the Guidance Document may only unpack one of these areas as an example. The centre is then expected to apply the same level of breadth and depth provided in the exemplar to the other areas defined in the Assessment Outcome.

The next review of the Guidance Document will be published for the 2025 teaching year during October. The review ensures the currency and validity of horticultural thinking contained in the document.

Section A

Questions 1 – 20

General comments on Section A

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.

Many candidates were able to score high marks in Section A, indicating a sound grasp of horticultural knowledge, and the application of good examination technique.

Some centres have asked for the correct answers for Section A questions to be made available. As all Section A questions are part of a bank of questions, which may be used in future examination series it is not appropriate to publish the correct answers.

Candidates and centres are reminded of good examination technique with regards to forced answer questions. Candidates are advised to:

- Carefully read the question
- Underline any key or important words in the stem of the question
- Score through inappropriate answers
- Select the correct answer to be recorded on the response grid.

Section B

Each question is considered separately.

Question 1

This question required candidates to describe three distinct leaf adaptations that protect a plant from herbivory.

The requirement for the examples to be distinct ensures candidates are able to demonstrate their knowledge of a range of different adaptations.

Strong candidate responses include:

- spikey leaf margins
- trichomes that produce an irritant
- tannins as antifeedants
- spines
- essential oils that deter feeding insects.

Weaker candidate responses were either vague, for example hairy, or stated aromatic oils (which may be used in attracting pollinators, rather than protection from herbivory) or were botanically inappropriate, for example describing stem, rather than leaf adaptations.

Question 2

The first part of this question requires the candidate to explain how limited oxygen availability in the soil may affect the growth of the roots of some tree species.

Strong candidate responses included:

- low levels of oxygen can result in root death
- low levels of oxygen can encourage roots to forage, often growing upwards towards the surface of the soil
- low levels of soil oxygen lead to reduced root respiration, which reduces energy release, which limits root growth, and so reduces anchorage, or nutrient foraging
- low levels of oxygen can slow root growth.

Weaker candidate responses were often either incorrect, or were correct, but did not relate to root growth:

- low levels of oxygen reduce bacterial activity in the soil
- low levels of oxygen reduce the nutrient quality of the soil
- some trees are adapted to survive in waterlogged areas (mangroves) as they have aerenchyma that perform snorkel-like functions
- oxygen is an important element for plant growth
- roots may be shallower and go deeper.

Candidates were then asked to discuss two impacts that this might have on a domestic garden.

Stronger candidate responses included:

- where roots come to the surface of the soil, they can lift paving
- where roots come to the surface of the soil, they can crack paths
- where roots come to the surface of the soil, they can impede planting
- where roots come to the surface of the soil, they can cause blade strike when mowing.

Weaker candidate responses, were either incorrect, not related to the question or too vague to allow the award of marks at Level 2:

- this can lead to wilting and other symptoms of stress which can result in other plants in the garden suffering and damaging biodiversity
- they will consume any nutrients they can find which depletes reserves for micro-organisms trying to survive and help fertilise the soil
- the need to more carefully consider which plants are bought.

Question 3

This question required candidates to name three stem adaptations for perennation. Candidates were required to provide a named plant example for each.

To allow candidates to demonstrate their depth of knowledge and mastery of this area, there was a further requirement to exclude tubers from their responses.

Stronger candidate responses included:

- Corms, for example in *Crocasmia x crocosmiiflora*
- Rhizome, for example *Iris germanica*
- Stolon, for example *Fragaria x ananassa*
- Bulb, for example, *Tulipa* 'Queen of Night'.

Weaker candidate responses often ignored the requirement to exclude tubers by naming stem tubers along with a suitable plant. Other incorrect responses included:

- Tubers, for example *Solanum tuberosum*
- Adventitious roots, *Cornus alba*
- Tillers, grasses such as couch grass
- Tendrils, *Wisteria* to attract pollinators
- *Fuscea anuoa* produces high volumes of light pollen
- Thorns for protection of being eaten by animals, *Berberis*
- In edible growing, onions are a stem adaptation grown underground as a food source

Some weaker candidate responses did not provide named plant examples, or stated common names. Candidates and centres are reminded that where a question requires candidates to name a plant, 1 mark is awarded for the full scientific name, with ½ mark being awarded for responses which state only a genus, (but only if all species within this genus are appropriate to the question). Common names are awarded ½ mark, if they give a correct, positive identification of the plant.

The Qualification Specification states that candidates are required to be able to provide named plant examples under the Qualification-wide outcome, Best Practice; 'Professional use of named plant species in a wide range of horticultural settings'.

Question 4

In the first part of this question candidates were required to state one advantage to a plant of dispersing its seeds.

Stronger candidate responses included:

- the seed may disperse to an area which more fully meets its need, for example a more appropriate soil pH, or rainfall
- dispersal spreading offspring to reduce competition for finite resources
- dispersal offers the opportunity for colonisation of new areas.

Weaker candidate responses did not relate to the requirements of the question or were incorrect, for example:

- to reproduce
- seed dispersal means the plant has a chance to increase genetic diversity through cross pollination
- to increase survival rate
- to diversify the areas where the plant is growing to increase the chances of survival

The second part of the question required candidates to name two distinctly different seed adaptations that favour wind dispersal. Candidates were additionally required to demonstrate their applied horticultural knowledge by providing a named plant example for each adaptation.

Stronger candidate responses included:

- Seed pods can be designed to catapult seed through the air, such as Hairy Bittercress
- Helicopter seeds, for example *Acer campestre*
- Parachute structures lift seeds into the wind, for example, *Taraxacum officinale*
- The use of a samara, (a winged sail) such as those on *Acer campestre*.

Weaker candidate responses were incorrect, or did not demonstrate knowledge of seed adaptations as required by the qualification specification, or the Ofqual level 2 descriptors. Responses of this nature included:

- Seeds can be designed to catch the wind and float through the air, such as *Taraxacum* (Dandelion) (In this case the candidate was not awarded marks for the adaption, as this was not named, but was awarded a half mark for *Taraxacum*.)
- Produce large quantities of light seed, Poppy. (In this case light seed is not a seed adaptation for wind dispersal.)
- Sheperd's Purse, (is a common name, which is awarded ½ mark, rather than the scientific name.)
- Seeds are produced in large quantities to maximise germination, for example, *Miscanthus sinensis*. (Does not relate to dispersal.)

- Hairy and fluffy and light seedheads, (lack of technical language at Level 2)
- Fluffy balls of hair, Dandelions are a perfect example, (lack of technical language at Level 2)
- Large quantities of very light non sticky pollen (this relates to pollen, not seed)
- Seeds that favour wind dispersal (lacking detail)
- Conifer seeds explode in case of fire or intense heat and propel themselves away and use the wind to carry them as far from the parent as possible. (Incorrect, the seeds do not explode).

Question 5

This question required candidates to demonstrate their knowledge of the horticultural terms; hardy annual, half-hardy annual and bulb by providing named plant examples for each of these terms.

As the RHS Hardiness ratings are now increasingly being used by horticulturists these were also included in the stem of the question.

Candidates who were able to provide correct plant examples using the full scientific name scored full marks.

Many weaker candidates provided incorrect responses. These included naming *Crocus sativus* as an example of a bulb, when it is a corm, providing named examples of hardy annuals as half-hardy annuals, providing the names of shrubs, or biennials and annuals.

In the second part of this question candidates were asked to list two benefits of seasonal displays in an urban community garden.

Stronger candidate responses included:

- providing a connection to nature for an urban population
- provision of pollen and nectar for beneficial insects
- bringing people together to plan and plant displays
- providing habitat for urban wildlife
- attract a wider cross section of people to the garden, increasing social cohesion
- increased civic pride.

Weaker candidate responses included vague, partial or incorrect information, including:

- these plants can be bought cheaply or grown from seed
- seed can be saved from one year to the next
- the plants flower through the year

Question 6

This question set a scenario, stating that the candidate had been asked to advise on plants that are suitable for a small domestic garden with a sunny aspect.

Candidates were then required to state two characteristics that would make a plant suitable for this scenario.

Strong candidate responses included:

- select plants with silvery leaves to reflect the strong light and reduce transpiration
- select plants with rolled leaves to reduce transpiration
- select plants that grow to an appropriate size for the garden to ensure scale and proportion
- select plants with hairy leaves to reduce exposure to light and reduce transpiration.

Weaker candidate responses either did not reflect the requirement of the question, were vague or were incorrect, for example:

- the plants should not spread through the garden (response does not relate to the requirement of the question)
- they do not grow too tall as that would shade other plants (response does not relate to the requirement of the question)
- plants should like the sun and be fairly drought resistant, (characteristic not stated)
- plants should have high sun tolerance, (characteristic not stated)
- perennial plants that provide interest and flowers that are beneficial to pollinators, (response does not relate to the requirement of the question)
- the leaves will be suitable to enjoy the sunshine and aid photosynthesis, (characteristic not stated).

Candidates were then asked to demonstrate their applied horticultural knowledge by naming three suitable plants (for the scenario) and to also form a harmonious planting scheme.

Strong candidate responses included a selection of plants suited to the scenario that would harmonise using scientific plant names.

Examples of high scoring responses include:

Lavandula angustifolia, *Rosa* 'Don Juan', *Paeonia officinalis*
Daphne odora, *Camellia japonica* (white) *Primula vulgaris* (yellow)
Salvia nachtvinder, *Echinops ritro*, *Lavandula angustifolia*

Weaker candidates either ignored the scenario, or did not suggest plants that would harmonise, or used common names.

Finally, candidates were asked to justify their plant selection by describing one reason why the plants stated would form a harmonious plantings scheme.

Stronger candidate responses fully justified their plant selection, for example stating:

- The plants have blue and purple flowers that are adjacent on the colour wheel
- The plants have colours that are opposite each other on the colour wheel
- The textures and shapes create interest, along with aroma from....
- The colours red and blue create a striking contrast against the green architectural backdrop of the *Fatsia*.

Weaker candidate responses were vague, incorrect or did not meet the requirement of the question.

Question 7

This question required candidates to state why biodiversity should be restored and protected.

Candidates were also instructed to exclude reference to financial cost from their responses.

Strong candidate responses included:

- to protect 'at risk' habitats
- to stop the extinction of species through habitat destruction
- to protect pollinators that are required for food crops
- the benefits to wellness and mental health
- to reduce the impacts of climate change
- habitats often store or sequester carbon
- to provide an educational resource
- to preserve organisms yet to be studied that may be classified as having medical benefits
- to preserve food webs
- to prove ecosystem services.

Weaker candidate responses, had repeated points, or points that were vague for example:

- to create a balanced ecosystem
- if we don't some species will die out
- for humans to continue to grow food and eat
- cultural and recreational benefit
- increase number of species.

Question 8

This question required candidates to describe three main roles of a botanic garden.

Stronger candidate responses included:

- to educate people about plants and their environments
- to conserve at risk plant species
- to carry out research relating to plants, ecology and climate resilience
- to collect, preserve and propagate endangered plant species

Weaker candidates often suggested the benefits of botanic gardens on people, for example places of relaxation and beauty, without discussing the three main roles of botanical gardens.

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
- carefully planned their answers, including key points
- approached the question logically
- shared horticultural knowledge that was technically correct and to the required depth of knowledge for Level 2
- demonstrated a full and holistic knowledge of the topic areas and Qualification-wide outcomes.

through to candidates who:

- produced very short responses which did not provide the required level of depth and breadth
- provided responses which were unplanned and unstructured
- provided responses that gave a framework, but which did not provide the required level of detail
- picked up on certain words in the question, and wrote all they knew about these words, rather than answering the question.

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.

Further guidance:

Further guidance on Section C will be issued to Centres in early 2025.

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 use their knowledge of Plant Adaptations and Biodiversity to discuss how deciduous trees are adapted to their environment and how they provide essential habitat.

Candidate responses were graded against the assessment ladder as discussed and detailed earlier in this report.

Candidate responses graded as being in the higher bands:

- provided logical responses that developed key concepts
- demonstrated a solid understanding of key terms, for example habitat
- demonstrated an advanced knowledge of plant adaptations and biodiversity
- discussed a wide range of plant adaptations, using their plant science knowledge to accurately describe these adaptations, and their biodiversity knowledge to discuss how these adaptations provide habitat.

Examiners took a relaxed approach to ‘plant adaptations’, when assessing candidate responses. The key requirement being stated in the stem of the question, ‘how deciduous trees are adapted to their environment’.

Areas discussed by candidates assessed in the higher bands included:

- Leaf drop providing habitat for a range of invertebrates
- Leaf drop providing habitat for a range of small mammals
- Leaf drop providing habitat within the soil for a range of micro and macro-organisms
- Leaves provide forage for mammals, for example deer
- Leaves provide cover for wild birds
- Root exudates creating habitat for bacteria
- Roots enhancing opportunities for mycorrhizal fungi
- The production of berries, and a range of seed types provides food.

Weaker candidates often failed to apply their specific knowledge of plant adaptations, as specified in the Qualification Specification. Weaker candidate responses suggested that twigs are used in nest building by birds. This is true and is important. However, twigs are not specific to deciduous trees. They cannot be considered as plant adaptations as they do not benefit plants. Twigs were therefore regarded by markers to be irrelevant information.

It is recommended that candidates are issued with the assessment ladder and given opportunity to develop and demonstrate the skill required to develop long form responses that demonstrate full mastery of the areas of assessment outcomes that are being assessed.

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Question 2

This question started with a quotation. 'Plant adaptations produce a variety of visual characteristics that can be used within gardens to provide interest'.

Candidates were then instructed to discuss how this concept can be applied when considering the planting of a new garden.

Candidates were further advised to include named plant examples, along with considerations of height, colour and form.

It should be noted that questions of this nature are at the higher level of demand. These questions are designed to assess the candidate's integrated knowledge, and their ability to address a straightforward problem. At Level 2 candidates should be able to think through these straightforward problems and suggest solutions. This process requires candidates to recall knowledge, integrate that knowledge, and develop responses that answer the question.

Strong candidate responses included a detailed discussion relating to the plant adaptation before moving on to suggest how this adaptation is used when planting a new garden. Plant examples were then stated along with a consideration of height, colour and form.

For example:

Tendrils are plant adaptations; these can be used when planting a garden to create areas of vertical interest. *Passiflora caerulea* could be used to create a vertical barrier, it adds green foliage, with purple flowers and orange egg-like fruit in the autumn. The vertical barrier can be over 2m in height.

Weaker candidates provided responses which lacked detail, used common names, did not include named plant examples, did not consider height, colour and form, or more commonly did not relate to a plant adaptation. Other weaker responses went off topic, discussing the role of plants in benefitting pollinators, or the role of plants in reversing biodiversity decline.

The prevalence of answers outside the scope of the question, in particular when related to botanical features that are not plant adaptations (and which are assessed in Unit 1) suggest that candidates require more guidance on the development of responses to Section C questions.

Question 3

This question required candidates to respond to a statement 'The management of gardens is being adapted to respond to climate change'.

The question then required candidates to discuss how horticultural practices are evolving to achieve this.

Stronger candidate responses considered:

- basic concepts, for example winters being wetter and spring often being drier to develop a framework for their responses
- the development of climate adaptive solutions, for example the use of rain gardens
- the need as an industry to source plants that can cope with both drought and flood conditions
- the pollarding of trees to reduce the sail effect, sometimes referred to as stormscaping
- the need to carry out regular reviews of reliable information sources to enable effective strategies to be developed
- the importance of citizen science projects to inform maintenance decisions
- the use of fossil fuels in garden maintenance was considered, with candidates suggesting alternatives to minimise the effect of gardens on climate change itself
- the concepts of water management within gardens, to include collection, use of grey water
- discussions relating to the impact of carbon sequestration as a concept on the maintenance of gardens, reducing use of bonfires, use of log piles, use of minimal cultivation systems
- the use of windbreaks.

Weaker candidate responses discussed:

- the concept of climate change
- the causes of climate change
- the role of school gardens to educate children.

Weaker candidate responses were often vague and lacking in detail, repeating the stem of the question by stating that the management of gardens was changing as a result of climate change, but without providing the discussion that was required in the stem of the question.

Question 4

This question contained a quotation relating to biodynamic gardens.

Candidates were then required to explain what biodynamic growing is, where it originated and how conversion to biodynamics would change the way that they garden.

Strong candidate responses demonstrated a clear understanding of the concepts that underpin biodynamic growing:

- that it is a holistic, coevolutionary, earth-friendly practice
- that it creates abundant health for soil, plants, animals, people, and planet
- that each unique and self-sustaining organism contributes generously to the ecological, economic, social, and spiritual vitality of its surrounding community and landscape, and the whole living earth
- that biodynamics is a way to bring health and healing
- that biodynamic horticulture provides new thinking, perspectives and practices.

The founding work of Rudolph Steiner was fully discussed.

Finally, stronger candidate responses suggested how the approach to garden maintenance would change if biodynamic principles were applied, to include:

- concepts such as connection to the cosmos
- the application of biodynamic herbal preparations in composting
- the use of horn manures in the winter
- the use of silica within horns in the summer
- cultivar selection
- ethics
- integration with animals.

Weaker candidate responses were often vague and failed to demonstrate a level of understanding consistent with Level 2.