



Candidate Number:

Candidate Name:

Centre Number/Name:

**RHS LEVEL 3 ADVANCED CERTIFICATE IN HORTICULTURE
WRITTEN EXAMINATION**

Wednesday 5th July 2006

IMPORTANT – Please read carefully before commencing.

- i) The duration of the papers in Module **E** is **2 hours**.
- ii) Answer **ALL** questions in Section **A**.
- iii) **ALL** questions in Section **A** carry equal marks.
- iv) Write your answers legibly in the spaces provided.
- v) Use **EITHER** metric **OR** imperial measurements, but **NOT** both.
- vi) Where plant names are required, they should include genus, species and where appropriate, cultivar.

Module E

**Design of Ornamental Gardens
Plant Selection, Establishment and Maintenance
Ornamental Landscape Construction**

Section A – Short Answer Questions

Please turn over/.....

ANSWER ALL QUESTIONS

Marks

Q1 a) Name **THREE** distinct types of grass that may be used in a fine turf mixture.

b) State **ONE** mixture suitable for use in the production of fine turf.

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Q2 Name **FOUR** herbaceous perennial plants to provide late autumn colour (September – October).

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Q3 Differentiate between a 'strip' and a 'raft' foundation.

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Q4 Describe how soil texture may influence the depth and spacing of land drains.

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Please see over/.....

ANSWER ALL QUESTIONS

Marks

Q5 Define **EACH** of the following terms:

- i) hardy annual;
- ii) biennial;
- iii) half-hardy annual;
- iv) herbaceous perennial.

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Q6 Name **FOUR** appropriate surfaces for a children's play area.

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Q7 a) Define **EACH** of the following garden design terms:

- i) unity;
- ii) proportion.

b) State **ONE** example for **EACH** of the terms listed in a).

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Please turn over/.....

ANSWER ALL QUESTIONS

Marks

Q8 State **ONE** appropriate use for **EACH** of the following pieces of surveying equipment:

- i) boning rod;
- ii) water tube level;
- iii) builder's square;
- iv) ranging pole.

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Q9 Explain how existing vegetation and essential services may influence the design proposals for a new garden.

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Q10 State **FOUR** reasons for incorporating water in garden design.

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WRITTEN EXAMINATION**

Wednesday 5th July 2006

IMPORTANT – Please read carefully before commencing.

- i) The duration of the papers in Module **E** is **2 hours**.
- ii) Answer **ONE** question from each **B, C** and **D** Sections.
- iii) **ALL** questions carry equal marks.
- iv) Write your answers legibly in the answer booklets provided.
- v) Use **EITHER** metric **OR** imperial measurements, but **NOT** both.
- vi) Where plant names are required, they should include genus, species and where appropriate, cultivar.

Module E

**Design of Ornamental Gardens
Plant Selection, Establishment and Maintenance
Ornamental Landscape Construction**

Sections B, C & D

Structured Questions

Please turn over/.....

Section B – Design of Ornamental Gardens

Answer **ONE** question only from this section

	Marks
Q1 Describe the influence for EACH of the following, in the design and layout of a site:	
i) views from the site;	5
ii) views into the site;	5
iii) aspect;	5
iv) exposure.	5
Q2 a) Review EACH of the following terms and their interrelationship in the context of garden design:	
i) movement;	
ii) scale;	
iii) space;	
iv) symmetry;	
v) asymmetry.	10
b) Describe the application of the terms listed in a), to the layout of a small suburban garden.	10

Section C – Plant Selection, Establishment & Maintenance

Answer ONE question only from this section

	Marks
Q3 Describe the renovation and subsequent maintenance of a neglected fine lawn, which has bare patches and a significant weed population of <i>Achillea millefolium</i> (Yarrow) and <i>Trifolium repens</i> (Clover).	20
Q4 a) List and describe the merits of FIVE shrubs, EACH from a different genus, which could be used for a mixed hedgerow in a rural situation in order to encourage wildlife.	10
b) Describe the establishment and subsequent annual maintenance of the mixed hedgerow.	10

Section D – Ornamental Landscape Construction

Answer ONE question only from this section

		Marks
Q5	a) Evaluate FIVE factors that will influence the type of fence to be erected between two domestic gardens.	10
	b) i) State a suitable fence type to be sited on a steep, or undulating slope.	2
	ii) Explain reasons for the choice in b) i).	8
Q6	a) State what is meant by the terms 'tread' and 'riser' in the context of steps. Give an example of suitable dimensions for the riser and tread in a flight of garden steps and explain the relationship between the two dimensions.	6
	b) List the safety factors which need to be considered when designing a flight of steps in a garden.	4
	c) Draw labelled longitudinal sections in order to show how a flight of steps 300mm high by 1.4m long, would be constructed in EACH of the following situations:	
	i) a semi-wild garden, using railway sleepers and stone chippings.	5
	ii) a formal garden, using standard pre-cast concrete paving slabs and clay bricks.	5



RHS (LEVEL 3) ADVANCED CERTIFICATE IN HORTICULTURE WRITTEN EXAMINATION

Wednesday 5th July 2006

Module E

Design of Ornamental Gardens Plant Establishment and Maintenance Ornamental Landscape Construction

Examiners Report

Candidates Registered	277		Total Candidates Passed		
Candidates Entered	212	76.53%	Passed with Commendation	43	20.29%
Candidates Absent	40	14.44%	Passed	120	56.60%
Candidates Deferred	11	3.97%	Failed	49	23.11%
Candidates Withdrawn	14	5.06%			

It is of vital importance that candidates practice examination technique. It is obvious from candidate responses that some centres delivering the qualification are not paying sufficient attention to this important aspect.

It is of equal importance that candidates make themselves familiar with the meaning of the key words used in questions. Lengthy short answers generally indicate that candidates have failed to correctly interpret the question, in the majority of instances they have not understood what type of response is actually required. E.g. in context 'Explain' requires candidates to 'make the meaning clear'; when the question asks you to list, state or name then that is **all** you have to do. There were occasions where candidates gave answers that were excessive and contained information that was quite far removed from the scope of the question set.

In some instances handwriting again proved difficult to decipher. Candidates must remember that if the examiner cannot read what has been written the award of any marks is impossible.

On a positive note it was pleasing to observe candidates offering more examples to back up their answers, these help to confirm understanding and enable examiners to be more generous within the constraints of their marking schemes.

In general many of the answers presented by candidates were of a good standard and provided satisfactory evidence of good understanding and knowledge of the science and practices underlying horticulture.

While in most cases the answers presented directly reflected the question set in the paper there were occasions where it was obvious that candidates had either not read or not fully understood the question they had been set.

Where the question asks for plant names they should be quoted in full. It is not acceptable to merely suggest sp. is a suitable plant; species vary within a genus and it is necessary to be specific.

Section A – Short Answer Questions

- Q1** a) Name **THREE** distinct types of grass that may be used in a fine turf mixture.
- b) State **ONE** mixture suitable for use in the production of fine turf.

It was important that candidates named grasses from different genera. Fine turf does not generally contain *Poa annua* or *Lolium perenne* as a specific ingredient. Marks were often not gained because candidates could not list sufficient suitable and distinct grasses. However candidates were better able to state a suitable seed mixture for fine turf and full marks were gained here when both suitable species and their % in the mix was quoted.

- Q2** Name **FOUR** herbaceous perennial plants to provide late autumn colour (September – October).

Most candidates were able to NAME FOUR herbaceous perennials for late autumn colour. Some candidates however listed shrubs while others named plants which were at their best in spring or early summer. The examiner did accept autumn foliage colour as suitable and in general good marks were gained in this question.

- Q3** Differentiate between a 'strip' and a 'raft' foundation.

Most candidates understood the difference between Raft and Strip foundations and so good marks were gained in this question. Most candidates were able to give good descriptions of the different types and it should be noted that small diagrams are useful in this type of question to help explain and to cut down the amount that needs to be written. Where reference was made to the load bearing capacity of the soils on site high marks were awarded.

- Q4** Describe how soil texture may influence the depth and spacing of land drains.

Candidates struggled with this area of knowledge and few were able to give a clear description of how soil texture influenced the depth and spacing of drains. Clay soils require closed spaced drains inserted at greater depth than sandy soils and in sandy soils drains can be spaced further apart. Where this was properly explained and where both depth and spacing were explained candidates were well rewarded.

Q5 Define **EACH** of the following terms:

- v) *hardy annual;*
- vi) *biennial;*
- vii) *half-hardy annual;*
- viii) *herbaceous perennial*

A good understanding of the differences between hardy, half hardy, biennial and herbaceous perennial were displayed and there was little confusion. Candidates found this question popular and the marks gained were consistently high. Candidates should be encouraged to use examples of plants that show the specific trait even where this is not specifically required by the set question.

Q6 Name **FOUR** appropriate surfaces for a children's play area.

The variety of surfaces suitable for use in a children's play area were well understood and this question was popular with many candidates. The answers given were consistently good and while there was some repetition evident in the material quoted e.g. 'poured rubber' and pulverised rubber' included as constituents in the four appropriate surfaces asked for, few candidates lost marks

Q7 a) Define **EACH** of the following garden design terms:

- i) *unity;*
- ii) *proportion.*

b) State **ONE** example for **EACH** of the terms listed in a).

The question was very well answered and few candidates failed to gain good marks in their attempts. Good examples were given and there was evidence of a sound understanding of the differences that existed between the two terms. Candidates should be encouraged to read widely so that they are able to quote good examples of such classic terms.

Q8 State **ONE** appropriate use for **EACH** of the following pieces of surveying equipment:

- v) *boning rod;*
- vi) *water tube level;*
- vii) *builder's square;*
- viii) *ranging pole.*

Candidates continue to be unsure of the range of terms and the equipment used in surveying. Four pieces of equipment were presented to candidates in this question and there were few that were able to correctly state the appropriate use for each one. Many understood the use of boning rods to establish levels, few were completely sure about the use of a ranging pole (which is merely a pole for marking a point during survey), many were able to work out the use of the builders square but just as many had difficulty deciding what the water tube level was to be used for.

Q9 *Explain how existing vegetation and essential services may influence the design proposals for a new garden.*

A good understanding of the link between existing vegetation and services was shown in respect of the setting out of new plans on a site. Candidates showed a good understanding of the need to know where services were in order to plan around them. Tree preservation orders and the restrictions of conservation legislation were considered when candidates explained the role of the existing vegetation but only a few made mention of the use of existing vegetation to estimate the acidity or alkalinity of the soil. Some candidates included the need to consider the use of existing vegetation to provide a microclimate and the need to retain this when planning the new site. The question was well answered and most candidates gained good marks.

Q10 *State **FOUR** reasons for incorporating water in garden design.*

Most if not all candidates gained good marks with this question and were able to state FOUR reasons for incorporating water in a garden design. Some chose to highlight Persian, Moorish and Islamic use of water, other went for the sound, reflective qualities and the increase in habitats for both plants and animals.

Section B – Design of Ornamental Gardens

Q1 *Describe the influence for **EACH** of the following, in the design and layout of a site:*

- v) *views from the site;*
- vi) *views into the site;*
- vii) *aspect;*
- viii) *exposure.*

- i) Views out of the site should be classified into good or bad views. The good views can be used to extend the garden beyond the boundary to provide not only a view to a point of interest beyond the garden, but also unity where it has distinct shape, which can be repeated, within the garden. The vista so created can also dictate the composition of open space. Unsightly or bad views can be screened; this will effect the arrangement of planting mass or other screen methods. If there are no worthwhile views; it may be necessary to provide the interest entirely within the garden
- ii) The layout of the site will be affected by the position of entrances and access points to the garden. Vistas can be arranged to entice people into a site and will affect the location of open space and focal points. The desire for privacy and the need to hide unsightly objects within the garden. The location of windows and entrances from the house also primarily affect the location of focal points and the composition of the open space in a site.

- iii) The aspect is the way the site actually faces; the slope of the site or the location the dominant structure such as the house can affect this. This will directly affect the areas and amount of light and shade on the site and will have a major impact on the location of seating areas, horticultural features such as glasshouses and the selection of plants.
- iv) The amount of exposure dictated by the general openness and the attitude of the site/ Prevailing winds also have to be taken into account by the location of both windbreaks, which can be made up of living plants or artificial materials. Exposure will affect the choice of plants, the placement of seating areas and the creation of planting niches to create microclimates.

Q2 a) Review **EACH** of the following terms and their interrelationship in the context of garden design:

- vi) movement;
- vii) scale;
- viii) space;
- ix) symmetry;
- x) asymmetry.

b) Describe the application of the terms listed in a), to the layout of a small suburban garden.

- a)
 - i) Clean flowing lines, gradual curves creates, long narrow shapes and long planting both vertically or horizontally create speed and movement to the eye. Tighter curves slow the movement of the eye. Squares circles and equilateral triangles slow the movement of the eye and are therefore static shapes.
 - ii) Scale is the relationship or relative size between one object and another. It can also refer to the size of the dominant structure, which often is the house. The size of the open space and the texture of the surfacing materials and the plants affect the apparent scale.
 - iii) Space should be provided, which approximate to two-thirds open scale.
 - iv) Symmetry is created by the arrangement of even numbers of plants, furniture or ornaments. Garden features are arranged centrally and 'mirror' image in the repetition of layout.
 - v) Asymmetry is based on third and two thirds both in the arrangement and vistas and placement of 'key' elements.
- b) Movement can be provided in the shape of the open space, long spaces will provide length and will draw the eye to a focal point. Squares, circles are static shapes, which draw the eye to the centre of the site. Individual plants provide static shape and are often plants with distinct form or texture. Plants are placed in extended groups lead the eye and therefore create movement.
Scale, using plants and features in scale with the size and shape of the site. Scale and texture of the surfaces; fine texture will increase the apparent space. Coarse textured surfaces will tend to decrease the apparent size of the site. Scale in relation to human form, certain features such as cook gardens and Japanese gardens can be out scaled by human form.

Space should be provided so that the site does not appear claustrophobic, normally in the proportion of two-thirds open space, one third planted.

Either the shape of the site, i.e. square sites, normally dictates symmetry in layout lending them to say a circular shaped space. A symmetrical house will also imply a symmetrical layout.

Asymmetry lends itself to rectangular sites, or sites and irregular shape. Vistas are arranged and composed using the third, two-thirds rule or 'Golden Proportion'.

Planting can also be arranged in odd numbers and in irregular groups.

Section C – Plant Selection, Establishment & Maintenance

- Q3** *Describe the renovation and subsequent maintenance of a neglected fine lawn, which has bare patches and a significant weed population of *Achillea millefolium* (Yarrow) and *Trifolium repens* (Clover).*

A question which asked candidates to describe renovation/maintenance of a neglected fine lawn containing yarrow and clover, plus bare patches. Candidates scoring well in this were able to discuss logically in a number of areas these may include weed control, mowing, overseeding/returfing, irrigation, scarification and aeration, top dressing and feeding. In order to score well the particular cultural activity being described needed specific detail. For example where candidates chose to overseed the bare areas they should have included details of time of year, seed bed preparation, seed mix, sowing rate and aftercare in order to gain maximum marks.

- Q4** a) *List and describe the merits of **FIVE** shrubs, **EACH** from a different genus, which could be used for a mixed hedgerow in a rural situation in order to encourage wildlife.*
b) *Describe the establishment and subsequent annual maintenance of the mixed hedgerow.*

Full credit was given to candidates who accurately named and described 5 appropriate native/naturalised shrubs. Fewer marks were given for other selections.

Candidates scoring well in the second part were able to give detailed guidance on season of planting, type/size of planting material, ground preparation, planting arrangement, weed control, rabbit protection, feeding and general aftercare. For the annual maintenance the better candidates were able to discuss appropriate seasonal cutting and even the benefits of hedge laying.

Section D – Ornamental Landscape Construction

Q5 a) Evaluate **FIVE** factors that will influence the type of fence to be erected between two domestic gardens.

- b) i) State a suitable fence type to be sited on a steep, or undulating slope
ii) Explain reasons for the choice in b) i).

a) All candidates who answered this question were able to identify five factors, such as privacy, security, safety, cost, legal considerations, exposure etc. In most answers these were well laid out in an extended list format, but the question required an evaluation and in many cases this described the scenario of why the fence was required rather than the type to be selected. Higher marks were awarded to those who went on to give examples of types of fences which would fulfill the requirements, with an understanding of materials and dimensions, and explored comparisons for different situations under each heading

References to height and open or solid construction, which are fundamental to most applications, for varying reasons, were often not well explained or omitted. Some of the factors selected were rather vague; for instance just to state “Aesthetics” as looking nice (especially to the neighbours) was not an adequate answer without taking styles and unity, both within the site and the locality, into account.

No candidates made reference to the British Standards for fencing, which could have avoided confusion over the names of some types of fences. For instance it was not always clear what was meant by “Ranch” fences as opposed to “Post and Rail”, and “Chainlink” was confused with “Post and Chain”. Simple sketches would have helped in many cases.

b) Part (i) was generally well answered with many candidates gaining full marks. The most suitable types would be Post and Rail, Palisade or Closeboarded. Wire fences were given as suitable types but many of the examples offered would not be entirely suitable due to the problems involved in the straining of the wires, and the cladding, up and down slopes.

The main point which needed to be explained in part (ii) was that the fence selected should be adaptable and flexible in construction (in situ) and able to follow the lie of the land. The best answers included a sketch to illustrate how this was achieved. In some cases, however, incorrect (and often impossible) construction details were shown. Many candidates suggested panel fences and rightly stated the need for stepping the sections, but in most cases did not adequately explain the problems in doing so, or suggested massive foundations and retaining walls to overcome the problem – these being the very reasons why this type of fence would not be selected for such a site.

- Q6**
- a) *State what is meant by the terms ‘tread’ and ‘riser’ in the context of steps. Give an example of suitable dimensions for the riser and tread in a flight of garden steps and explain the relationship between the two dimensions.*
 - b) *List the safety factors which need to be considered when designing a flight of steps in a garden.*
 - c) *Draw labelled longitudinal sections in order to show how a flight of steps 300mm high by 1.4m long, would be constructed in **EACH** of the following situations:*
 - iii) *a semi-wild garden, using railway sleepers and stone chippings.*
 - iv) *a formal garden, using standard pre-cast concrete paving slabs and clay bricks.*

a) All candidates were able to identify the treads and risers of steps; most provided a simple sketch which often included further correct terminology in the labeling. Most answers gave suitable dimensions but they were not always appropriate in relation to each other. Although it was generally recognized that the dimensions were important in the safe and comfortable use of the steps, only a few candidates were able to quote a recognized formula used in the calculation of these measurements.

b) This part of the question was well answered in most cases. Marks were awarded to candidates who included:

- Choice of non slip materials
- Consistency of step size
- Provision of landing
- Definition of leading edges
- Illumination
- Drainage to avoid puddling and algae growth
- Provision of a handrail

c) This part of the question required accurate labeled drawings and in almost all cases these were of a poor standard. Marks were awarded for clear, accurate drawings (not necessarily to scale) in black and white (colouring is not necessary), drawn with a ruler, with clear labels and dimensions, and showing a sound knowledge of materials and construction details.

The provision of dimensions in the question required some calculation to make the steps fit appropriately, using a recognized ratio of treads and risers. Most candidates did arrive at a suitable number of steps, and were awarded marks accordingly, but in most cases there was no indication as to how this was arrived at. Labeling was often sparse or even non-existent, and dimensions, both overall and of individual components, were nearly always omitted altogether. Construction details, especially of foundations, were poorly illustrated in the majority of answers, this was not helped by the apparent lack of knowledge, especially of the dimensions, of basic standard landscaping materials – railway sleepers, concrete slabs and bricks. Some candidates lost time by unnecessarily describing the process and sequence of construction, which was not asked for.

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