



Candidate Number:

Candidate Name:

Centre Number/Name:

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

Wednesday 8th February 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 Establishment and Maintenance
Ornamental Landscape Construction**

Section A – Short Answer Questions

Please turn over/.....

ANSWER ALL QUESTIONS

Marks

Q1 Describe the method used to plot the position of trees during a linear survey.

2

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Q2 Explain the difference between strip and raft foundations.

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Q3 List **TWO** advantages and **TWO** limitations of establishing a lawn from turf.

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Q4 Define the term 'backsight' in the context of surveying.

2

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Please see over/.....

ANSWER ALL QUESTIONS

Marks

Q5 Describe the safety factors to be considered when operating a whacker plate/plate compactor.

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Q6 State **TWO** techniques which may be used to maintain the wildflower population in a meadow.

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Q7 Explain how a garden designer can make use of 'borrowed scenery' when designing a new garden.

2

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Please turn over/.....

ANSWER ALL QUESTIONS

Marks

Q8 List **FOUR** items of personal protective clothing recommended for use when building a 1.5m high brick wall.

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Q9 State the soil preparation necessary prior to planting trees on a site with compacted sub-soil.

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Q10 Name **FOUR** plants suitable for inclusion in a colourful winter hanging basket.

2

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Wednesday 8th February 2006

IMPORTANT – Please read carefully before commencing.

- i) The duration of the papers in Module **E** is **2 hours**.
- ii) Answer **ONE** question from **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 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	a) Describe how a design of a garden is influenced by the style of the house.	4
	b) Distinguish between traditional and contemporary garden styles, using EACH of the following headings:	
	i) statues;	4
	ii) seats;	4
	iii) water;	4
	iv) screening.	4
Q2	a) State FIVE site constraints which may be identified during a garden survey.	5
	b) Evaluate how EACH of these influences the design.	15

Please see over/.....

Section C – Plant Selection, Establishment & Maintenance

Answer ONE question only from this section

	Marks
Q3 a) Describe the pruning regime necessary to obtain the best results from EACH of the following plants:	
i) <i>Buddleja davidii</i> ;	3
ii) <i>Ribes sanguineum</i> ;	3
iii) <i>Cytisus x praecox</i> ;	3
iv) <i>Wisteria sinensis</i> ;	3
v) <i>Clematis montana var rubens</i> .	3
b) Describe the renovation pruning and cultural activities for an old, neglected specimen of <i>Weigela florida</i> .	5
Q4 a) Prepare a planting scheme for an island bed measuring approximately 4m x 3m situated within a lawn. Select a mixture of shrubs and herbaceous perennials with a yellow/golden colour scheme; primarily for spring and summer interest.	10
b) Outline the annual maintenance programme for the bed.	10

Please turn over/.....

Section D – Ornamental Landscape Construction

Answer ONE question only from this section

		Marks
Q5	a) State what is meant by a free standing garden wall and give an example of where one may typically be found in a garden.	3
	b) Name and describe a brick bond for a free standing 215mm thick garden wall with the aid of diagrams, stating reasons for its suitability.	5
	c) With the aid of diagrams, illustrate the problems associated with free standing garden walls and state how these may be overcome.	12
Q6	Review the use of FIVE distinct hard landscape features in the design of a small town garden.	20



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Wednesday 8th February 2006

Module E

Design of Ornamental Gardens Plant Establishment and Maintenance Ornamental Landscape Construction

Examiners Comments

Candidates Registered	253		Total Candidates Passed		
Candidates Entered	203	80.24%	Passed with Commendation	51	25.12%
Candidates Absent	31	12.25%	Passed	107	52.71%
Candidates Deferred	10	3.95%	Failed	45	22.17%
Candidates Withdrawn	9	3.56%			

Section A – Short Answer Questions

In general the answers presented by candidates were of a good standard and provided evidence of good understanding and knowledge of the subject. Although in most cases the answers presented did reflect the question set in the paper there were occasions where it was obvious that candidates had either not read or not understood the question set. It is important to understand that when the question asks you to list then that is all you have to do. There were occasions where candidates gave answers that were excessive and contained information that was outside the scope of the question set

Q1 Describe the method used to plot the position of trees during a linear survey.

Candidates were asked to describe the method used to plot the position of a tree during a linear survey of a site. Most candidates were familiar with the offset method of accurately plotting and recording the position of the tree. Where candidates provided information on more elaborate methods of measuring and plotting the position of the tree they did not gain such high marks.

Q2 Explain the difference between strip and raft foundations.

Most candidates were able to differentiate between strip and raft foundations and on occasions answers were very detailed indeed. Often however there was little reference made to the load-bearing capacity of the underlying soil or substrata with candidates preferring to give more consideration to the size of the structure to be supported.

Q3 List **TWO** advantages and **TWO** limitations of establishing a lawn from turf.

Most candidates attempted this question and were easily able to set out two advantages and two disadvantages of establishing a lawn from turf. Aspects of cost, seasonality, speed of establishment and availability of suitable turf seed mixtures were frequently quoted in context and gained candidates good marks.

Q4 Define the term 'backsight' in the context of surveying.

Define the term 'backsight' in the context of surveying Candidate seemed to struggle with this area of knowledge and few were able to give a good clear definition of the surveying term 'backsight'. Good marks were gained by those candidates who were able to define the term correctly, ie A backsight is the first reading taken when you change the position of the surveying instrument during a level survey and is the reading taken back on to the staff which is still in its previous position. This allows the surveyor to check and record any change in level between the new position of the surveying instrument and the level of the previous position. OR it could be explained as the reading of the levelling staff in its unchanged position when the levelling instrument has been taken to a new position; it is the reading taken from the instrument directed backwards to the staff held in the previous position. a station previously occupied. Either explanation was acceptable

Q5 Describe the safety factors to be considered when operating a whacker plate/plate compactor.

A good understanding of personal and third party safety was evident from the range of answers candidates provided to this question. Most were familiar with the equipment mentioned in the question and could identify the hazards and the safety factors to be considered, namely the wearing of steel toe capped/ protective footwear, ear muffs/defenders, and suitable gloves to absorb vibrations. It was also important to mention the problems associated with lifting and handling heavy equipment and to ensure that the operator was familiar with the operation of the machine. Candidates were also credited with marks where they noted the need to be aware of co workers and members of the public during the operation of such equipment. This question was popular and generally well answered.

Q6 State **TWO** techniques which may be used to maintain the wildflower population in a meadow.

While the question asked specifically for the annual maintenance required to maintain the population of wild flowers in a meadow, candidates chose to describe the initial soil modification work required during the establishment phase. Other candidates interpreted the question correctly and the quality and accuracy of their answers was good. However many candidates omitted to relate mowing times to the flowering and seed shedding cycle of the flowers.

Q7 Explain how a garden designer can make use of 'borrowed scenery' when designing a new garden.

This was a popular question well understood and well answered. The concept of 'borrowed scenery' was well explained and good marks were achieved where this was related to the design and layout of the design and planting within the garden.

Q8 List **FOUR** items of personal protective clothing recommended for use when building a 1.5m high brick wall.

A well understood well answered question with many candidates gaining high marks. It was pleasing to note the depth of thought that had gone into many of the answers but where the question asks for a 'List' that is all that you need to supply.

Q9 State the soil preparation necessary prior to planting trees on a site with compacted sub-soil.

Because of the wide interpretation of the word 'site' candidates were often lead into describing the use of unfamiliar equipment. Candidates who were able to describe the correct treatment of subsoil, amelioration and the general relief of compaction gained good marks.

Q10 Name **FOUR** plants suitable for inclusion in a colourful winter hanging basket. Most candidates were able to name FOUR plants suitable for a colourful winter hanging basket. Where plants were appropriate and suitable for the mixture suggested good marks were awarded. Occasionally however summer flowering and tender material was suggested and as a consequence fewer marks were awarded. Candidates should also realise that it is necessary to quote the full plant name and not simply write down sp.

Section B – Design of Ornamental Gardens

- Q1**
- a) Describe how a design of a garden is influenced by the style of the house.
 - b) Distinguish between traditional and contemporary garden styles, using **EACH** of the following headings:
 - i) statues;
 - ii) seats;
 - iii) water;
 - iv) screening.
- a) Candidates gained the highest marks if they mentioned at least four of the following.
- Position in the building of the entrances and windows in the location of vistas, access paths and 'key' features. The height of the structure and related scale of the associated plantings and hard features such as terraces. The layout of the site could take into whether the building is symmetrical or asymmetrical. The materials used including their colour may well dictate the type and colour of the hard features used in the garden.
- The distinctive shape of the building which could be used in the composition and shape of the open spaces. The aspect and orientation of the building will also effect the selection of the plants and the location of the plants.

- b) *Statues:* Traditional statues are of people, animals, mythical, urns, vases and the like. Contemporary statues include abstract objects and monoliths. They can be made of the following materials: stone, marble, bronze, lead and reconstituted stone. Materials will also include traditional materials and timber, willow, plastic and steel.

Seats: Traditional 'English' timber seats, stone, cast iron often with intricate patterned ends. Materials include stone, timber including Arts and Crafts seats. Contemporary seats are often of simple lines, 'S' shaped curved around trees, moulded seat made out of variety of materials such as plastic, steel and concrete.

Water: Traditional features include circular and rectangular ponds placed in classical landscapes. Fountains and cascades again using classical design features. Rills and Cold Baths can also be mentioned as part of an answer. Contemporary water features have simple and clean lines often surrounded by modern paving. Fountains and water falls can be provided with modern materials such as steel, stainless steel and glass, with clean flowing lines. Simple gurgling fountains, water walls can also be mentioned as part of this answer.

Screening: Traditionally provide as stone or brick walls which have classical embellishments, or straight forward plain walls. Traditional hedges can be formed of Beech or Yew. Pergolas also traditionally have been used as a partial screen.

Modern screens can be providing by materials such as Willow, timber slats, painted fences both in straight and curved lines. Partial barriers include screen block walling or chain curtains.

- Q2** a) State **FIVE** site constraints which may be identified during a garden survey.
b) Evaluate how **EACH** of these influences the design.

- a) This was a question where candidates easily achieved the full marks allotted to this section. Marks were not awarded where they mentioned constraints imposed by the client. Some candidates were a little too narrow with some of their constraints e.g. a number of candidates mentioned shade from a tall building which therefore restricted their answers for part b). It would have been better to mention a number of external factors which could have widened the scope for the subsequent answers.

Marks were awarded briefly for the following: access from both within and outside the site both in the construction phase and when the scheme was complete. Views in and out of the site, shape and size of the site, topography, soil factors such as pH, texture and drainage. Aspect and orientation, climate, frost pockets and exposure. Legal factors such as planning, curtilage and conservation. Dominant geology of the area and the selection of hard features. Services both overhead and underground. Pollution from both industrial and highway sources and maritime exposure.

- b) Possible answers for this section included:
- Orientation and aspect: amount of shade and sun light at different times of the day, exposure to wind will affect both the climate on the site. This will effect the location of open spaces, screening, selection of plants and the positioning of seating areas.
- Services: overhead power lines restricting the height of trees, underground services need to be located as they can be affected by earth moving operations, roots of trees can affect services, the location of manholes and the like can be incorporated into hardfeatures also require access. The need for water and electricity to operate various garden features.
- Legal factors: tree preservation orders and the management of both the trees and the surrounding ground. Public rights of way. Planning restrictions, which can include items such as building and nature conservation. Property deeds may have planting height restrictions.
- Views out: good views and bad views, screening and use as 'borrowed' views. This will often dictate the location and composition of the vistas and open space within the site.
- Soil factors: the pH will affect the type and range of plants grown, soil drainage will effect the treatment of the site - the requirement for drainage, whether it will be easier to use moisture-loving plants or water features. Nutrient status and soil texture will also affect the cultivation and selection of the plants.
- Pollution: the use of both screening and pollution tolerant species including examples.
- Marks were awarded wherever appropriate to the naming of plants suited to the constraint or the practical management of the constraint on the site.

Section C – Plant Selection, Establishment & Maintenance

- Q3**
- a) Describe the pruning regime necessary to obtain the best results from **EACH** of the following plants:
- i) *Buddleja davidii*;
 - ii) *Ribes sanguineum*;
 - iii) *Cytisus x praecox*;
 - iv) *Wisteria sinensis*;
 - v) *Clematis montana var rubens*.
- b) Describe the renovation pruning and cultural activities for an old, neglected specimen of *Weigela florida*.

Candidates who scored well in Part (a) were able to state time of year as well as describe the type and extent of material that should be removed. It was not sufficient simply to say prune after flowering. For example *Buddleja davidii* – prune hard back to a framework in March.

Candidates scoring well for part (b) generally adopted one of two approaches. Cutting hard back to a stool or phasing this hard pruning in over a 2 or 3 year period. Both would be followed by appropriate feeding and mulching.

- Q4**
- a) Prepare a planting scheme for an island bed measuring approximately 4m x 3m situated within a lawn. Select a mixture of shrubs and herbaceous perennials with a yellow/golden colour scheme; primarily for spring and summer interest.
- b) Outline the annual maintenance programme for the bed.

This question was designed to test the candidates' knowledge of yellow/golden shrubs and herbaceous perennials for the spring and summer seasons. The better candidates presented a selection with an outline diagram/planting scheme for an island bed. Marks were not given for trees, conifers and any annuals selected. Candidates achieving well in part (b) presented their annual activities in a structured season-by-season approach, relating specific tasks to plants selected for Part (a). Those who chose to do it month by month frequently ended up with a lot of repetition of jobs.

Marks were not given for planting and establishment details, as the question asked for annual maintenance.

Section D – Ornamental Landscape Construction

- Q5**
- a) State what is meant by a free standing garden wall and give an example of where one may typically be found in a garden.
 - b) Name and describe a brick bond for a free standing 215mm thick garden wall with the aid of diagrams, stating reasons for its suitability.
 - c) With the aid of diagrams, illustrate the problems associated with free standing garden walls and state how these may be overcome.
- a) All candidates who answered this question could state that a free standing wall was an independent structure which was not attached to, or designed to support another structure, such as a building or roof. Few, however, went on to explain that it therefore needed to be designed to be inherently capable of supporting itself, especially in situations where it was built in a straight line. The most common example given was for a boundary wall, where it *would* often be built in a straight line.
- b) Most candidates could correctly name a bond suitable for a 215mm thick wall, but very few answers included a satisfactory diagram. The most commonly quoted bond was English Bond, but, in almost all cases, there was no indication as to how the quarter lap bond was established and maintained with the inclusion of queen closers, and in some answers the wall was illustrated with no lap at all. Most answers correctly stated that the headers in the wall would give it strength across the width of the wall. No answers referred to the fact that the wall would need to have a fair face on both sides – in which case English Garden Wall Bond would be the most suitable (hence its name), this allows for variations in brick sizes, especially when using reclaimed or hand-made bricks. Just saying a brick bond was attractive was not adequate.
- c) There were very few good answers submitted for this section. Many candidates spent far too long describing the construction techniques, especially of the foundations, without referring to the problems specific to free standing walls. Apart from being largely irrelevant to the question, many of the descriptions and diagrams were technically inadequate. Some of these diagrams were of retaining walls and concentrated largely on the drainage problems associated with these. The better answers stated a problem and followed this up with a solution, but in many instances this was disjointed and often solutions were given without explaining the reasons why they were necessary. Many candidates identified the need for piers, and could quote spacings, but didn't explain adequately that this would improve the lateral stability against wind or physical pressures from (such as) vandalism, by increasing the width of the footprint. Similarly, the possibilities of designing the wall at the outset to include returns, zig-zags, staggers or curves was almost totally ignored

Wind pressure and exposure was often quoted as a problem but without a solution being offered. The problem of wind turbulence was also brought up, but some answers suggested the addition of climbers and trellis on top of the wall as a solution which could make the resistance even greater. The problems of being exposed to weather on all sides and the top were usually only solved by the provision of a coping, which was included in many answers, but the reasons were not always fully explained. It was generally assumed that the bricks in the body of the wall would not be sufficiently weather or frost proof without a coping; rarely was it suggested that a dense, frost proof brick should be selected for the entire structure. Likewise the cracking and break up of the mortar should not be a problem if correctly specified at the outset. Expansion joints were included by some candidates without really explaining why. The need for a damp proof course (dpc) at the base of the wall was specified in many answers, but no candidates identified a membrane dpc as being a weak point in a free standing wall, and, although the inclusion of engineering bricks was often stated as a dpc, this was not suggested as a replacement for the membrane in any answer. Also, no candidate suggested the omission of the dpc altogether to overcome this problem; any resultant mosses and lichens need not necessarily be seen as detrimental to the wall in many garden situations if the materials and construction specifications were appropriate at the outset.

Q6 Review the use of **FIVE** distinct hard landscape features in the design of a small town garden.

Most candidates who answered this question approached it by writing narratives under the headings of their chosen features. The biggest problem encountered here was in selecting five distinctly different features. Many candidates, for example, included a patio **and** decking, or a pergola **and** an arch or arbour, and proceeded to duplicate the descriptions of the uses of these features. Some features selected were somewhat vague; for example "Boundary", which then included descriptions of fences **and** walls, or "Gravel Area", which in many cases was nothing more than a gravel mulch which was planted through.

Many candidates had problems interpreting the question in connecting the term "use" with "design". Better answers explored how the feature might fulfil the aesthetic functions by relating this to design principles, such as unity, proportion, line pattern and illusion, and then went on to practical functions, such as linking house and garden, aspect and ensuring adequate dimensions for the proposed uses of the feature. Marks were also awarded for evaluating the choice of materials with regard to safety, security, cost ease of construction, maintenance requirements etc, but just saying it was "cheap", for instance was not enough and needed some kind of comparative explanation.

Some candidates wasted a lot of time sketching a garden design which contained their five features, or wrote a narrative describing a garden as a whole, this was not asked for and often confused the issue as the examiner was then expected to extract the information and relate it to five separate features. Some suggested features, such as planted pots, statues, bird baths etc, would normally be considered as ornaments rather than hard landscape features.

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