



Candidate Number:.....

Candidate Name:.....

Centre Number/Name:.....

**RHS LEVEL 3 ADVANCED/DIPLOMA IN HORTICULTURE
WRITTEN EXAMINATION**

10:00am Wednesday 4th July 2007

IMPORTANT – Please read carefully before commencing.

- i) The duration of the papers in Module I 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 metric measurements **ONLY**.
- vi) Where plant names are required, they should include genus, species and where appropriate cultivar.

MODULE I

**Restoring Established Ornamental Gardens
Planning Layout & Construction of Ornamental Gardens**

Section A – Short Answer Questions

Please turn over/.....

ANSWER ALL QUESTIONS

MARKS

Q1 State **FOUR** factors to be considered when siting a patio adjacent to a house. **2**

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Q2 List **FOUR** stages in ground preparation when establishing a utility lawn from seed. **2**

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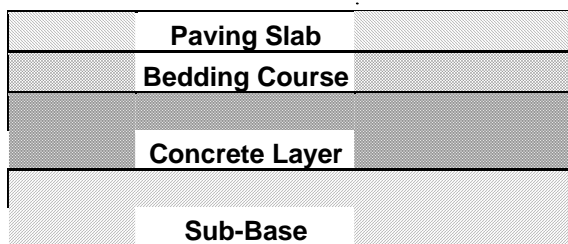
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Q3 Specify the **minimum** dimensions required for the labelled elements on the diagram. **2**



(Construction details for a paved area capable of supporting light vehicle traffic).

Please see over/.....

ANSWER ALL QUESTIONS

MARKS

Q4 State **TWO** factors which need to be considered when ‘haunching’ kerbs or edging. **2**

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Q5 State **FOUR** site characteristics that may influence choice of design style. **2**

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Q6 State **FOUR** factors, that influence the design and specification of a land drainage system. **2**

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Q7 Describe **TWO** ways in which the unintended losses of dormant plant species can be avoided during garden renovation. **2**

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Please turn over/.....

ANSWER ALL QUESTIONS

MARKS

Q8 List **FOUR** health and safety considerations when renovating an old overgrown wooden pergola.

2

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Q9 Describe **ONE** method of measuring the height of a mature tree.

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Q10 Name **ONE** invasive plant, that may be found in an overgrown border and state **TWO** methods of control.

2

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10:00am Wednesday 4th July 2007

IMPORTANT – Please read carefully before commencing.

- i) The duration of the papers in Module I is **2 hours**.
- ii) Answer **ONE** question from Section **B** and **TWO** questions from Section **C**.
- iii) **ALL** questions carry equal marks.
- iv) Write your answers legibly in the answer booklets provided.
- v) Use metric measurements **ONLY**.
- vi) Where plant names are required, they should include genus, species and where appropriate cultivar.

MODULE I

**Restoring Established Ornamental Gardens
Planning Layout & Construction of Ornamental Gardens**

Sections B & C

Structured Questions

Please turn over/.....

Section B – Restoring Established Ornamental Gardens

Answer ONE question only from this section

MARKS

- Q1**
- a) Describe the remedial work that can be carried out on an overgrown:
 - i) evergreen hedge; **6**
 - ii) deciduous hedge. **6**
 - b) Review the health and safety considerations involved when undertaking this work. **8**
- Q2**
- a) Describe the features of a typical Victorian garden and parkland. **10**
 - b) Outline the influence of plant introductions on the development of this style. **10**

Section C – Planning Layout & Construction of Ornamental Gardens

Answer TWO questions from this section

MARKS

- Q3**
- a) Review **FOUR** factors to be considered when specifying the depth and dimensions of the foundation for a brick garden wall. **8**
 - b) List **SIX** requirements to be included in the design specification for a free standing brick wall 1 metre high. **6**
 - c) Describe with the aid of a clearly labelled diagram, the additional specifications required if the wall in b), is designed to retain soil in a raised bed. **6**
- Q4**
- a) State **THREE** areas on a construction site from which topsoil should be removed prior to any construction work taking place. **3**
 - b) Describe how topsoil should be stored on site during the construction phase. **5**

- c) Review the range of equipment and machinery for contour adjustment on site, and state the health and safety implications of its use. **12**
- Q5**
- a) State, giving appropriate examples, **THREE** factors that determine the scale to be employed when producing drawings for a garden redevelopment scheme. **3**
- b) Describe with the aid of clearly labelled diagrams, **TWO** ways in which the boundaries of a garden can be accurately set out on site from a scale drawing using the house as a reference. **8**
- c) **NAME THREE** pieces of equipment with distinctively different modes of operation that are used to set out levels on a site. Fully describe the use for **ONE** of the named equipment pieces. **9**
- Q6**
- a) Explain, using appropriate examples, how **FIVE** site characteristics may influence the proposed design style of a garden. **15**
- b) Describe **FIVE** labour saving design principles in the planning of a low maintenance garden. **5**



RHS LEVEL 3 ADVANCED/DIPLOMA IN HORTICULTURE WRITTEN EXAMINATION

Wednesday 4th July 2007

MODULE I

Restoring Established Ornamental Gardens Planning Layout & Construction of Ornamental Gardens

Examiners Report

Candidates Registered	13				
			<i>Total Candidates Passed</i>		
Candidates Entered	9	69.23%	Passed with Commendation	1	11.11%
Candidates Absent	2	15.38%	Passed	6	66.66%
Candidates Deferred	2	15.38%	Failed	2	22.22%
Candidates Withdrawn	0	0			

Section A – Short Answer Questions

Q1 State **FOUR** factors to be considered when siting a patio adjacent to a house.

Most answers included FOUR of the following factors (0.5 marks each) to be considered when siting a patio next to a house:

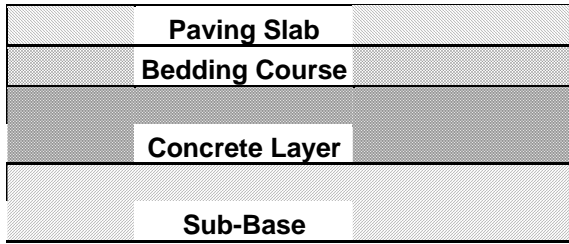
DPC, fall, use, aspect, size, surface material and aesthetic qualities.

Q2 List **FOUR** stages in ground preparation when establishing a utility lawn from seed.

Most answers included the following FOUR ground preparation stages (0.5 marks each) when establishing a utility lawn from seed:

Clear rubbish and debris from area. Clear perennial weeds, stating an acceptable method. Primary cultivation – dig over (rotovation acceptable). Rake, consolidate, rake to a fine tilth; Leave stale seed bed before using an acceptable method to clear annual weed growth, drainage, when included in place of clearing rubbish, attracted marks.

Q3 Specify the **minimum** dimensions required for the labelled elements on the diagram.



(Construction details for a paved area capable of supporting light vehicle traffic).

Many candidates were unsure of the minimum dimensions required to complete the diagram of a paved area capable of supporting light vehicle traffic: 25mm, 30mm, 150mm, 150mm.

Q4 State **TWO** factors which need to be considered when 'haunching' kerbs or edging.

Few candidates were able to give TWO correct factors (1 marks each) to be considered when 'haunching' kerbs or edging.

Haunching should not extend to the top surface of the unit to allow for soil cover or dressing with decorative aggregates, bricks, pavers, or paving slabs.

Depth and area of haunching needs to be sufficient to stop lateral spread of the edge of heavy load situations.

Q5 State **FOUR** site characteristics that may influence choice of design style.

Most candidates were able to state FOUR of the following site characteristics (0.5 marks each) that may influence choice of design style:

Influence of soil type, contour, exposure, drainage.

Q6 State **FOUR** factors, that influence the design and specification of a land drainage system.

Few candidates were able to state FOUR factors (0.5 marks each) that influence the design and specification of a land drainage system:

Any for from: Type of drain, Drain depth, Spacing of drains, Type of soil structure, Type of Soil texture, Planned use of site.

Q7 Describe **TWO** ways in which the unintended losses of dormant plant species can be avoided during garden renovation.

Candidates, although able to answer this question, did so too briefly and failed to describe TWO ways (1 mark each) in which the unlimited losses of dormant plant species can be avoided during garden renovation.

Answers included:

Check plans and records of the garden, Phase the renovation over a period of time to see what grows, Take care when digging.

Q8 List **FOUR** health and safety considerations when renovating an old overgrown wooden pergola.

The majority of candidates were able to list FOUR health and safety considerations (0.5 marks each) when renovating an old overgrown wooden pergola.

Any FOUR from :

Wood may be rotten and collapse as foliage is removed, Foliage over a pergola might be prickly/dusty and /or heavy, Reaching the top of the pergola/working at height, Stop unauthorised access to area, Weight of wooden struts and supports, Using wood-working tools (saw, hammer, drill etc, PPE as appropriate for tasks.

Q9 Describe **ONE** method of measuring the height of a mature tree.

Few candidates were able to adequately describe ONE method of measuring the height of a mature tree. The use of a clinometer for this task was not mentioned by candidates.

Q10 Name **ONE** invasive plant, that may be found in an overgrown border and state **TWO** methods of control.

The majority of candidates were able to name ONE invasive plant (1 mark), that may be found in an overgrown border (genus and species name not always included). Most answers used weeds when relevant tree seedlings/saplings would also attract full marks. Explanation of systematic chemical control and a cultural control gained marks, (0.5 marks each)

Section B – Restoring Established Ornamental Gardens

Q1 a) Describe the remedial work that can be carried out on an overgrown:

- iii) evergreen hedge;
- iv) deciduous hedge.

i) The best answers from candidates quoted genera and species of evergreen hedges on which to base their answers. Where for example the genus *Escallonia* or *Prunus laurocerasus* was quoted it enabled candidates to specify the hedges could be restored by cutting back between 40 and 60cm from the ground.

Where Yew *Taxus baccata* was cited as an example, the hedge can be cut back one side at a time over a 3 or 4 year period. It should be cut back to material about 25 to 50 mm for the best results.

All remedial work on evergreen hedges is carried out during the winter with shaping up of the hedge normally taking place in the late summer.

Weed control, the application fertilisers, mulching to conserve moisture and if possible irrigation will all help with the speedy regeneration of the hedge.

ii) The same comments can be made for the renovation of deciduous hedges. There are two methods of regeneration. For formal hedges such as Beech *Fagus sylvaticus*, overgrown and misshapen hedges can be cut hard back during the winter months to encourage regeneration. However with less formal hedges and those located in a rural area, hedge laying techniques can be practiced.

Regeneration can be encouraged with the use of mulches, application of fertilisers, weed control and irrigation.

- b) Review the health and safety considerations involved when undertaking this work.
- i) The health and safety factors when restoring the hedge will depend on the location and size of the hedge. If hedges are exceptionally tall scaffold towers or even a cherry picker may need to be used, this will have to be levelled and set up firm on the ground. Hedges over 1.m to 4m can be cut with the aid of a ladder. The use of ladders is restricted at heights over 4m and should not be used for more than 30 minutes at a time. Two people need to be present and the angle needs to be set at a 1 in 4 angle. (Further information can be gained on the HSE website 'Safe Use of Ladders and Stepladders')
- Weather conditions should be considered, hedges should not be cut in wet, frosty or dewy conditions especially when using electric hedge trimmers.
- All machinery should be checked both for safety and that cutting equipment is sharp. One should not work over the height of ones shoulders.
- Personal protective clothing should include hard hat, ear defenders, no loose clothing, gloves and long hair tied back.
- Warning signs for the public and restricting public access may be necessary.

- Q2** a) Describe the features of a typical Victorian garden and parkland.

Victorian landscapes could be designed in several ways. Much use was made of the Italian renaissance style in the use of formal landscape around the house. This can include parterres, statues, fountains and balustrades.

The 'Gardenesque' style includes many diverse features often with little unity between individual landscape features.

Formal bedding originated during this period, many schemes were extremely intricate. It was also the era of the development of both the conservatory and the glasshouse, the ability to pre fabricate and transport materials over long distances really revolutionised construction of protected structures. Development heating systems enabled the growing of exotic plants and the raising of seasonal bedding plants.

Specialist features were created to grow specific groups of plants. The Rock Garden not only used to grow alpine plants but to create alpine scenes. This was known as the 'Picturesque' style which could also be used in the arrangement of trees and shrubs. Other specialist features included ferneries, rose gardens and herbaceous borders.

- b) Outline the influence of plant introductions on the development of this style.

Plant introduction really drove the development of the garden and the more diverse garden style. The introduction of plants in some cases created specialised features to grow many of these plants.

The development of the tree and shrub garden was as a result of plant introductions from South Africa, South America, North America and specifically China and the Himalayas. Many gardens are based on the introduction of **Rhododendrons**, **magnolia** and **Camellias**, gardens are often located on acid soils.

Bedding plants led to the creation of seasonal planting schemes.

The development of both Arboreta and Pinetum drew together collections of trees and conifers.

Specialist features were created for groups of plants such as herbaceous perennials, roses, ferns and alpines.

Section C – Planning Layout & Construction of Ornamental Gardens

- Q3** a) Review **FOUR** factors to be considered when specifying the depth and dimensions of the foundation for a brick garden wall.

Marks were awarded for appropriate reviews of four of the following:

Soil type
Depth of soil
Stability of subsoil
Proximity to trees
Drainage
Size and weight of structure and imposed load.

- b) List **SIX** requirements to be included in the design specification for a free standing brick wall 1 metre high.

Marks were awarded for appropriate explanations of the specifications of six of the following:

Type and dimensions of foundation
Brick type and colour
Brick bond, Mortar mix ratio and colour
Joint profile
Damp proof course
Coping, Movement joints
Piers.

- c) Describe with the aid of a clearly labelled diagram, the additional specifications required if the wall in b), is designed to retain soil in a raised bed.

Marks were awarded for appropriate descriptions and specifications for a retaining wall to include a clear diagram, with the following information:

Adequate foundations (wider than free standing wall)
Appropriate thickness of wall (at least 1 brick)
Drainage provision (pipe/weepholes)
Tanking/vertical damp-proof course provision
Batter
Buttresses/piers
Movement joints
Reinforcement.

- Q4** a) State **THREE** areas on a construction site from which topsoil should be removed prior to any construction work taking place.

Three areas

Areas to be re-graded
Areas to have hard landscape or buildings erected
Areas where vehicles will operate, where equipment and materials will be stored and where general site operations will take place which could lead to compaction and contamination of the topsoil.

- b) Describe how topsoil should be stored on site during the construction phase. Marks were awarded for clear explanations of the processes, and reasons for the following operations, using examples where appropriate:
- Removal of existing vegetation
 - Correct machine (s) for the job
 - Segregation from subsoil
 - Appropriate location of bunds
 - Profiles of storage bunds to maintain stability
 - Dimensions of storage bunds
 - Possible measures to maintain structure and fertility, prevention of compaction, water logging, excessive drying, erosion, contamination, leaching.
 - Length of storage times
 - Method(s) of weed control during storage
 - Possibility of green manure/temporary cropping and its maintenance
 - Health and safety implications.
- c) Review the range of equipment and machinery for contour adjustment on site, and state the health and safety implications of its use.
- Suitable equipment to include:
- Excavators (360/180), JCB's dozers, bobcats, agricultural and compact tractors with appropriate attachments, graders, dumpers.
 - Indication as to suitability of methods of operation and traction for above to avoid compaction and shattering of the soil structure and to maximise efficiency.
 - Hand tools (ie spades, shovels, picks, barrows etc) may have been mentioned but it should be stated as inappropriate on anything but smallest projects.
- Safety of above to include:
- Risk assessment / method statement, signage/exclusion, location of underground and overhead services, correct training and certification of operatives, appropriate guards in place etc, and working on banks and near open excavations, shoring etc, PPE, record keeping and review.

- Q5** a) State, giving appropriate examples, **THREE** factors that determine the scale to be employed when producing drawings for a garden redevelopment scheme.

Marks were awarded for any three of the following, with appropriate examples and some explanation included if necessary:

Size of site

Industrial convention

Size and orientation of paper/drawing board available (landscape/portrait, A4 – A0)

Detail required (paving patterns etc of just overall layout)

Purpose of drawing, ie for artistic presentation to client or detailed setting out or construction.

Examples 1:100 for site plan, 1:20 for construction detail etc.

- b) Describe with the aid of clearly labelled diagrams, **TWO** ways in which the boundaries of a garden can be accurately set out on site from a scale drawing using the house as a reference.
- Methods – Triangulation and Extensions from the house. This required clear labelled diagrams explaining how this could be achieved accurately.

- c) **NAME THREE** pieces of equipment with distinctively different modes of operation that are used to set out levels on a site. Fully describe the use for **ONE** of the named equipment pieces.

Instruments, any three from the following with description of one:

Cowley, pendulum mirror mechanism to line up on target,

Quicikset/Automatic level, telescopic view of levelling staff,

Laser, rotating beacon picked up by sensor on levelling staff,

Spirit level and straight edge, linking a series of level pegs,

Water level, coloured liquid in a clear tube which finds its own level,

Total station, electronic distance and levelling measurement via beam reflected back by prism device.

- Q6** a) Explain, using appropriate examples, how **FIVE** site characteristics may influence the proposed design style of a garden.

Possible answers included expansion on (for example) the five following or similar themes:

i) aspect, ie south facing, hot and dry, drought resistant plants, sunny sitting area – this could suggest a Mediterranean style?

ii) Existing vegetation, native trees/woodland, likely to grow large, dry shade problems – woodland or country style? Wildlife garden?

iii) Drainage ie wet areas, seasonal, unusable in winter – bog or water garden? Lush or jungle planting? Wildlife, decking or rock garden?

iv) External and internal views, unity, 'Borrowed landscape' make garden appear to belong within the landscape, good or bad views? – screening possibilities, inward looking, private design, urban garden? Views within garden may be required for security reasons.

v) Existing architecture, unity, outside room ie town garden? Problems with shade, dry walls at bases, impoverished soils, overlooked, security, noise, possibilities with overhead structures, secluded, sheltered, tender plants possible?

- b) Describe **FIVE** labour saving design principles in the planning of a low maintenance garden.

Marks were awarded for descriptions of five of the following or similar:

Reduce fine turf areas requiring frequent mowing

Lawns to have shapes which allow easy mowing

Introduce groundcover (evergreen?)

Mulches / membranes

Drought resistant plants

No bedding

No plants requiring regular pruning (ie roses)

Plants resistant to pests and diseases

Reduce / omit containers requiring watering/feeding

Hard areas easy to sweep and/or wash down.

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