Candidate Number:……

Candidate Name:……

Centre Number/Name:……

RHS LEVEL 3 ADVANCED/DIPLOMA IN HORTICULTURE
WRITTEN EXAMINATION

2:00pm Wednesday 4th July 2007

IMPORTANT – Please read carefully before commencing.

i) The duration of the papers in Module **J** 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 J

Establishment & Maintenance of Decorative Ornamental Turf
Plant Selection, Establishment & Maintenance
Hardy Ornamental Nursery Stock

Section A – Short Answer Questions

ANSWER ALL QUESTIONS

MARKS

Q1 State **TWO** advantages and **TWO** disadvantages in establishing a new lawn from seed. **2**

.....

.....

.....

.....

.....

Q2 List **FOUR** maintenance considerations for a garden pool that contains both plant and animal life. **2**

.....

.....

.....

.....

.....

Q3 Explain how the application of lawn sand benefits the quality of the lawn. **2**

.....

.....

.....

.....

.....

Q4 State **FOUR** requirements of an outdoor seedbed. **2**

.....

.....

.....

.....

.....

Please see over/…..

ANSWER ALL QUESTIONS

MARKS

Q5 a) Name **TWO** ornamental trees suitable for a confined space within a small garden.

b) State why **EACH** tree named in a), may be considered as suitable. **2**

.....

.....

.....

.....

.....

Q6 Name **FOUR** devices or materials that may be used to provide support for herbaceous plants during growth. **2**

.....

.....

.....

.....

.....

Q7 State the type of grass conditions and **ONE** advantage associated with **EACH** of the following pieces of mowing machinery:

i) cylinder mower;
ii) flail mower. **2**

.....

.....

.....

.....

.....

ANSWER ALL QUESTIONS

MARKS

Q8 List **FOUR** maintenance operations that should be carried out to hanging baskets or containers for summer display. **2**

……

……

……

……

……

Q9 Define the classification term ‘Grade I’ for an ideal soil for Hardy Ornamental Nursery Stock (HONS) field production. **2**

……

……

……

……

……

Q10 Define the terms:

i) top working;
ii) bottom working. **2**

……

……

……

……

……

RHS LEVEL 3 ADVANCED/DIPLOMA IN HORTICULTURE
WRITTEN EXAMINATION

2:00pm Wednesday 4th July 2007

IMPORTANT – Please read carefully before commencing.

i) The duration of the papers in Module **J** is **2 hours**.
ii) Answer **ONE** question only from **EACH** of the sections **B**, **C** and **D**.
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 J

Establishment & Maintenance of Decorative Ornamental Turf
Plant Selection, Establishment & Maintenance
Hardy Ornamental Nursery Stock

Sections B, C & D

Structured Questions

Please turn over/…..

Section B – Establishment & Maintenance of Decorative Ornamental Turf

Answer ONE question only from this section

MARKS

Q1 a) Describe the characteristics of **FOUR NAMED** lawn grass species. **12**

b) Evaluate **TWO** species named in a), for **TWO** different situations. **8**

Q2 a) State **FIVE** turf maintenance operations routinely carried out on an amenity lawn area. **5**

b) Describe **EACH** operation stated in a), when and how it is carried out. **15**

Section C – Plant Selection, Establishment & Maintenance

Answer ONE question only from this section

MARKS

Q3 a) Define **EACH** of the following types of pruning:

i) formative;
ii) maintenance;
iii) regenerative;
iv) specialist. **4**

b) Describe how **EACH** operation named in a), is carried out on appropriate **NAMED** woody plants. **16**

Q4 Describe a hardy annual bed 2m x 7m, for **EACH** of the following:

i) ground preparation; **4**
ii) plant selection and sowing; **8**
*(with the aid of a diagram, using **NAMED** plant examples)*
iii) cultural requirements; **4**
iv) maintenance schedule. **4**

Section D – Hardy Ornamental Nursery Stock

Answer ONE question only from this section

			MARKS
Q5	a)	State the desired characteristics of a container compost for hardy ornamental nursery stock.	**10**
	b)	**NAME FOUR** bulk ingredients that can be used as alternatives to peat.	**4**
	c)	Describe the formulation of a suitable compost mix for a **NAMED** plant.	**6**
Q6	a)	List **FOUR** sources of propagation material for the production of liners from cuttings.	**4**
	b)	Explain the importance of a reliable source of good quality vegetative material for propagation purposes.	**4**
	c)	Provide in tabular format, a yearly management plan to supply cuttings from a **NAMED** hardy ornamental nursery stock plant.	**12**

RHS LEVEL 3 ADVANCED/DIPLOMA IN HORTICULTURE
WRITTEN EXAMINATION

Wednesday 4th July 2007

MODULE J

Establishment & Maintenance of Decorative Ornamental Turf
Plant Selection, Establishment & Maintenance
Hardy Ornamental Nursery Stock

Examiners Report

Candidates Registered	9				
			Total Candidates Passed		
Candidates Entered	6	66.66%	Passed with Commendation	1	16.66%
Candidates Absent	2	22.22%	Passed	4	66.66%
Candidates Deferred	1	11.11%	Failed	1	16.66%
Candidates Withdrawn	0	0%			

Section A – Short Answer Questions

Q1 State **TWO** advantages and **TWO** disadvantages in establishing a new lawn from seed.

Generally well answered

Q2 List **FOUR** maintenance considerations for a garden pool that contains both plant and animal life.
Some answers were insufficiently specific, eg candidates should have indicated the proportion of surface area of a pool to be covered by surface floating plants and why.

Q3 Explain how the application of lawn sand benefits the quality of the lawn.

Many candidates failed to appreciate that lawn sand was a chemical sand mix for the control of moss. There was little indication of the mode of action or benefits.

Q4 State **FOUR** requirements of an outdoor seedbed.

Most students listed basic requirements for a seedbed. Additional information liked to germination could be expected at advanced Level eg. Southwest facing slope for warmth and to aid germination. Free draining light loam for good aeration for root development. Free of perennial weeds that would compete with seedlings for light, space and moisture, or stale seedbed to reduce germinating weed seedlings.

Q5 c) Name **TWO** ornamental trees suitable for a confined space within a small garden.

d) State why **EACH** tree named in a), may be considered as suitable.
Generally well answered but spelling mistakes and incorrect use of upper and lower case initial letters are inexcusable at this level.

Q6 Name **FOUR** devices or materials that may be used to provide support for herbaceous plants during growth.

Some candidates actually named supports more suited to woody climbers and in some cases actually named woody climbers although I do appreciate there are some herbaceous climbing plants, *eg Humulus lupulus, Dicentra scandens.*

Q7 State the type of grass conditions and **ONE** advantage associated with **EACH** of the following pieces of mowing machinery:

iii) cylinder mower;
iv) flail mower.
v)

It was generally appreciated that cylinder mowers were suited to fine turf. Better students mentioned their scissor action cut but frequently had failed to note that this reduced bruising so giving a better finished appearance. Some students indicated little or imperfect knowledge of the mode of action of flail mowers although most knew they were ideal for rough swards.

Q8 List **FOUR** maintenance operations that should be carried out to hanging baskets or containers for summer display.
Weeding hanging baskets and containers is inappropriate maintenance as close planting in sterilised compost blankets weeds out.

Q9 Define the classification term ‘Grade I’ for an ideal soil for Hardy Ornamental Nursery Stock (HONS) field production.

Answers to this question were vague

Q10 Define the terms:

iii) top working;
iv) bottom working.
v)

This was a badly answered question with many candidates having no appreciation that top and bottom working refers to grafting techniques.

Section B – Establishment & Maintenance of Decorative Ornamental Turf

Q1 a) Describe the characteristics of **FOUR NAMED** lawn grass species.

b) Evaluate **TWO** species named in a), for **TWO** different situations.

No candidates attempted this question.

Q2 a) State **FIVE** turf maintenance operations routinely carried out on an amenity lawn area.

b) Describe **EACH** operation stated in a), when and how it is carried out.

The answers to this question were very varied. The list of routine operations is a long one but some candidates included pest and disease control as well as weed control. It could be said that neither of those is routine or that weed control is part of pest and disease control. Candidates who chose those options needed to look at the rubric for the question as part B of the question was only worth 3 marks each. Some candidates also looked at establishment rather than just maintenance. Others seemed rather confused about length of grass for an amenity LAWN at 200-400mm. Others mentioned mixtures for top-dressing which did not indicate whether they were by weight (kg) or by volume (bucketfuls or shovelfuls).

Section C – Plant Selection, Establishment & Maintenance

Q3 a) Define **EACH** of the following types of pruning:

v) formative;
vi) maintenance;
vii) regenerative;
viii) specialist.

Students generally could not provide a clear definition of the different types of pruning.

b) Describe how **EACH** operation named in a), is carried out on appropriate **NAMED** woody plants.

The best scores were achieved when clear examples with full Latin names were provided and detailed descriptions given. No students attempted to illustrate their answers which would have assisted the description.

Q4 Describe a hardy annual bed 2m x 7m, for **EACH** of the following:

v) ground preparation;
vi) plant selection and sowing;
*(with the aid of a diagram, using **NAMED** plant examples)*
vii) cultural requirements;
viii) maintenance schedule.

A hardy Annual Border is one example of a seasonal display.

i) A thorough explanation of the preparation of the bed was required bringing the soil to the point of marking out. Hardy annuals do not normally require supplementary nutrition.

ii) Full Latin names and a realistic design was required for this section, illustration of sowing in drills in various directions in different areas.

iii) What extra requirements are needed eg. Seed protection, plant support, weeding and deadheading.

iv) The sequence of tasks should then be clearly illustrated on a monthly or seasonal chart to obtain the best marks.

Section D – Hardy Ornamental Nursery Stock

a) State the desired characteristics of container compost for hardy ornamental nursery stock.

Most candidates correctly interpreted this part of the question and stated, using short phrases, what some of the desired characteristics of container compost are. Ten marks were available for this part of the question, however the majority of candidates provided only a limited number. Answers could have included the following:

- able to provide adequate physical support
- the correct pH for the range of material being grown
- contain the appropriate levels of nutrition for the range of material being grown
- easy to mix (prepare)
- be of even consistency
- ability to evenly incorporate constituent ingredients throughout the mix
- easy to wet
- easy to re-wet once it has dried out
- have good water holding capacity
- have good drainage
- provide adequate AFP (Air filled Porosity)
- be able to hold nutrients and resist leaching (good CEC Cation exchange capacity)

Whilst not strictly characteristics the following were also given credit:

- readily available in large quantities
- economically viable to use
- pleasant to handle.

b) **NAME FOUR** bulk ingredients that can be used as alternatives to peat.

This part of the question required candidates to provide the names of FOUR bulk ingredients that could be used as an alternative to peat. It was surprising that very few candidates were able to provide full answers, indicating an acute lack of essential knowledge. Environmental issues such as the use of alternative bulking agents should be high on the horticulturist's agenda. Alternative bulking agents could have included any of the following;

- treated sewage sludge
- composted seaweed
- composted straw
- composted municipal waste
- garden compost
- spent mushroom compost
- composted wood fibre
- coir
- composted animal fibre
- leaf mould
- tree bark.

The following were provided as alternatives to Peat, but are not used in compost formulation as a bulking agent instead of peat.

- Rockwool (too expensive, occasionally used in propagation mixes or as an additive. Also used as a substrate in hydroponics production)
- Vermiculite (too expensive, generally used to cover seed, occasionally incorporated into a propagation medium)
- Perlite (too expensive, generally used in propagation mixes to improve AFP and water holding abilities)

c) Describe the formulation of a suitable compost mix for a **NAMED** plant.

This part of the question required candidates to describe the formulation of a suitable compost mix for a NAMED plant. Sadly very few candidates were able to demonstrate a satisfactory knowledge of compost formulae. In most instances descriptions of the formulations lacked technical knowledge. There was little reference to specific quantities in terms of measurable volumes, or rates of additives in terms of kg / cubic metre. Some of the descriptions were obviously not relevant to the plant examples cited.

A specimen answer could have resembled the following:
<u>John Innes Potting Compost No 1 (per cubic metre)</u>
Named plant: Lycopersicum esculentum
2 parts sterilised loam
1 part sharp sand
1 part peat0.6 kg ground limestone
1.2kg of hoof and horn
1.2kg superphosphate
0.6kg potassium sulphate.

Q6 a) List **FOUR** sources of propagation material for the production of liners from cuttings.

This part of the question required candidates to provide a list of FOUR sources of propagation material for the production of liners from cuttings. The majority of candidates were able to list four sources, however the sources cited did not generally reflect common commercial plant practice (the first four form the list below) Answers could have included being collected from;

- stock plants grown for the purpose
- saleable stock
- plants bought in specifically for the purpose
- a specialist supplier of cutting material
- a public garden
- a private garden
- a heritage garden
- a municipal open space

A small number of candidates listed where material could be located on the actual plant and went on to describe in detail how each 'part' could be used. This kind of response was not required.

b) Explain the importance of a reliable source of good quality vegetative material for propagation purposes.

This part of the question required candidates to explain the importance of a reliable source of good quality vegetative material for propagation purposes. Many candidates failed to note the key word 'explain' (which means to make things clear) instead they chose to describe sources of plant material in some detail. The examiner was expecting candidates to say why it is important to have a reliable source of good quality material for propagation. Explanations could have included any of the following:

- to guarantee that the plant material is true to name
- so that material free from physical damage can be selected
- so only material free from pests and disease can be selected
- so only material free form environmental disorders can be selected
- so that material can be taken from the right stage of growth
- to ensure that plant material is not subject to nutrient deficiency/stress
- to ensure that the material has not been subjected to damage by extremes of temperature (heat or cold)
- so that material can be selected form an appropriate place on the plant
- so that material that is true to type, typical to form and colour can be selected for propagation
- so that only uniform material is selected and propagated
- so that material can be selected for its regenerative qualities ie 'rootability'

c) Provide in tabular format, a yearly management plan to supply cuttings from a **NAMED** hardy ornamental nursery stock plant.

This part of the question required candidates to provide in tabular format, a yearly management plan to supply cuttings from a NAMED hardy ornamental stock plant. A small number of candidates chose to describe in detail how to propagate a specific plant, this was not required. The majority of candidates did provide their answer in a table, however some chose to randomly list operations, with out reference to timing or specific detail, which made awarding marks difficult. Candidates who provided a named example and details of what, when and how were justly rewarded.

The following topics should have been included:-

A named stock plant that would be classified as hardy ornamental nursery stock.

- Pruning at the correct time to encourage suitable material for the desired method of propagation
- Feeding at the correct times(s) with an appropriate fertiliser
- Providing adequate irrigation at appropriate times in order the plants are not subjected to water stress
- Effectively controlling pests at the right time to prevent virus transmission
- Effectively controlling diseases to prevent physical damage to the material
- Scheduled replacement of stock material to ensure juvenility and viability of material.

****