Candidate Number: ……..

Candidate Name: ……

Centre Number/Name: ……

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

## Wednesday 9 February 2005

**IMPORTANT – Please read carefully before commencing.**

i) The duration of the papers in Module **D** 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 and species.

# Module D

## Outdoor Plant Production
### Protected Plant Production

## Section A – Short Answer Questions

Please turn over/……

**Answer All questions**.

**Marks**

**Q1** Explain how the shelf life of a **NAMED** outdoor vegetable can be extended by **TWO** specified post harvest treatments. **2**

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**Q2** Explain the use of pheromone traps in top fruit growing and state **TWO** advantages of the method. **2**

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**Q3** Name **FOUR** types of organic mulch suitable for nursery stock beds, stating **FOUR** advantages of mulching. **2**

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## Answer All questions

**Q4** List **FOUR** distinct flowering pot plant genera and state the major period of sale for **EACH**. **2**

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**Q5** Name **FOUR** distinct methods of growing tomatoes under protection. Give **ONE** advantage of **EACH** system. **2**

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**Q6** List **FOUR** essential items of protective clothing required to be worn by an operator applying herbicide to a nursery stock area. **2**

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**Q7** List **FOUR** distinct methods used in the preparation of soils for vegetable growing. **2**

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**Please turn over/……**

## Answer All questions

**Q8** State **FOUR** limitations to the production of organic vegetables. **2**

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**Q9** **List** FOUR **desirable qualities in bedding plants to be found at the point of sale.** **2**

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**Q10** **List** FOUR **main sources of disease which may be found where plants are grown in protective structures.** **2**

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

**Wednesday 9 February 2005**

**IMPORTANT – Please read carefully before commencing.**

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

# Module D

## Outdoor Plant Production
## Protected Plant Production

## Sections B & C

## Structured Questions

Please turn over/……

## Section B – Outdoor Plant Production

**Answer TWO questions from this section.**

**Marks**

**Q1** Describe the production and management of a **NAMED** standard deciduous tree grown from seed to point of sale, with reference to **EACH** of the following:

i) seedbed preparation; **8**
ii) sowing and seedbed aftercare; **6**
iii) lining out and growing on. **6**

**Q2** Describe the container-production of a **NAMED** herbaceous perennial from seed under **EACH** of the following headings:

i) propagation; **8**
ii) containerisation and growing on; **7**
iii) marketing. **5**

**Q3** a) State the factors that influence the ultimate size of fruit trees. **10**

b) Describe an annual maintenance programme to ensure maximum yield and quality. **10**

**Q4** a) State the factors to be considered by the grower for marketing a **NAMED** crop of cut flowers. **10**

b) Assess the benefits to the grower and customer of specified post harvest treatment. **10**

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**Please see over/…….**

## Section C – Protected Plant Production

Answer ONE question from this section.

| | | | Marks |
|---|---|---|---|
| Q5 | a) | Name **FOUR** plant nutrients required by protected crops and describe examples of deficiency symptoms for **EACH**. | **8** |
| | b) | Describe a method of application and stage of growth, when nutrients are best applied for a **NAMED** plant/crop. | **8** |
| | c) | Explain how the nutritional requirements of a plant can best be determined. | **4** |
| Q6 | **a)** | Name **FOUR** different types of protective structures. | **8** |
| | **b)** | For **EACH** structure named in (a) state both the constructional and cladding materials used. | **8** |
| | **c)** | Describe the suitability of **EACH** structure for the plant/crop grown. | **4** |

# RHS (LEVEL 3) ADVANCED CERTIFICATE IN HORTICULTURE

## Wednesday 9th February 2005

## MODULE D

## Outdoor Plant Production
## Protected Plant Production

## Examiners Comments

| | | | | | |
|---|---|---|---|---|---|
| Candidates Registered | 41 | | Total Candidates Passed | | |
| Candidates Entered | 33 | (80.5%) | Passed with Commendation | 15 | (45.5%) |
| Candidates Absent | 5 | (12.2%) | Passed | 16 | (48.5%) |
| Candidates Deferred | 1 | (2.4%) | Failed | 2 | (6.0%) |
| Candidates Withdrawn | 2 | (4.9%) | | | |

## Senior Examiners Comments.

In the scripts marked from the four modules (A, B, D & E) of the February 2005 Advanced Certificate in Horticulture examinations there were often too many generalisations. With many answers, there was a lack of clear factual information backed up by appropriate horticultural and technically correct examples. It is essential that candidates are briefed in the importance of providing factual information, appropriate and accurate examples to demonstrate their application and understanding of the questions.

Candidates should:

- Obtain instruction in basic examination techniques, i.e. **read questions carefully and answer the question as set,** allowing sufficient time for each part of the question and ensuring that all sections of a question are answered;

- Acquaint themselves with examination terminology and it's meaning; for example the differences between state, describe, explain, evaluate, etc.

  **State** - ***to write down the facts briefly***
  **Describe** - ***to give a descriptive account of***
  **Explain** - ***to make the meaning clear –****it requires more information than a description, invariably based on an understanding of the underlying principles.*
  **List** - ***to itemise***
  **Evaluate** - ***to review the best points and problem areas***

- ∞ Practise interpreting examination questions;
- ∞ Undertake mock examinations (time constrained) and seek constructive feedback;
- ∞ Understand vocational terminology;
- ∞ Use large, clearly labelled diagrams where it is helpful to do so but do not waste time by giving annotated diagrams and then repeating the information in text form, the use of colour should only be used where it enhances the interpretation of the diagram.
- ∞ Give the full name to an item when it is first stated and avoid the use of quick lecture shorthand e.g. –ve for negative & +ve for positive.
- ∞ Demonstrate full understanding of a subject by relating answers to named examples and or principles, whether or not requested in the question.
- ∞ Present the answer in the order required by the question or clearly mark the answer with the appropriate question sections;
- ∞ **When naming plants use full botanical names, i.e. genus and specific epithet.**

Examination paper markers commented that it was difficult to mark some of the exam scripts because candidates failed to properly identify the question. There were many instances of poor handwriting and the way in which the answer was laid out exacerbated this problem. If an examiner cannot read the candidate's writing it is not possible to award marks. Candidates need to identify their answers by clearly writing the question and section numbers.

## Section A. Short Answer Questions

*Q1. Explain how the shelf life of a **NAMED** outdoor vegetable can be extended by **TWO** specified post-harvest treatments.*

Candidates failed to gain marks by not relating their answers to a NAMED VEGETABLE. Good examples included vacuum cooling and ice bank cooling for lettuce and carrots.

*Q2. Explain the use of pheromone traps in top fruit growing and state **TWO** advantages of this method.*

Pheromone traps in fruit growing, generally well answered. The use and advantages of the traps were understood.

*Q3. Name **FOUR** types of organic mulch suitable for nursery stock beds, stating **FOUR** advantages of mulching.*

Candidates gaining most marks were those who ensured that only organic materials were identified.

*Q4. List **FOUR** distinct flowering pot plant genera and state the major period of sale for **EACH**.*

Some candidates confused foliage and flowering plants. Begonia Rex is a foliage plant. To name just "Primula", with no species or variety included, did not qualify for full marks.

*Q5. Name **FOUR** distinct methods of growing tomatoes under protection. Give **ONE** advantage of **EACH** system.*

Four distinct methods of growing tomatoes provided little difficulty for candidates. Growing in beds, use of grow bags, ring culture, hydroponics, NFT were all included.

*Q6. List **FOUR** essential items of protective clothing required to be worn by an operator applying herbicide to a nursery stock area.*

It was encouraging to note that most candidates were familiar with the type of protective clothing required when handling herbicides.

*Q7. List **FOUR** distinct methods used in the preparation of soils for vegetable growing.*

This question could be answered in more than one way:
Types of cultivation e.g. – ploughing, rotary cultivation, digging. Or bed systems, sterilising, use of fleece to warm up the soil before drilling and planting.

*Q8. State **FOUR** limitations to the production of organic vegetables.*

Limitations to the production of organic vegetables included: Extra labour required to meet quality standards. Limitations in the use of chemicals and pesticides, returns not adequate to meet the extra costs, the qualifying period before production, increased managerial skill required.

*Q9. List **FOUR** desirable qualities in bedding plants to be found at the point of sale.*

Candidates gaining full marks were those who correctly identified the full number of qualities, i.e. four, required by the question.

*Q10. List **FOUR** main sources of disease, which may be found where plants are grown in protective structures.*

Most candidates appreciated the sources of disease which include: - Containers, water, plant material, structures, general poor hygiene and management.

## Section B. Structured Questions (Outdoor Plant Production)

*Q1. a) Describe the production and management of a **NAMED** standard deciduous tree grown from seed to point of sale, with reference to **EACH** of the following:*

*i) seedbed preparation;*
*ii) sowing and seedbed aftercare;*
*iii) lining out and growing on.*

This was a popular question, few candidates were awarded full marks, answers were often incomplete, with poor sequencing of operations, and some candidates described the container production of trees, which was not asked for.

i) Required the candidate to sequence operations including timing of land preparation, ploughing, the incorporation of organic matter and the rate per ha, soil analysis and fertiliser application. Seedbed preparation including orientation, height, width and length and weed control.

ii) Should have included, the method of sowing a named seed and the rate per square metre, mulching with grit or suitable covering, weed control, irrigation and undercutting prior to lifting.

iii) Candidates gaining highest marks referred in their answers to lifting, grading and lining out in the nursery, including distance between the plants and the rows, support and tying-in, feathering, irrigation, feeding, weed control and labelling.

*Q2. Describe the container production of a **NAMED** herbaceous perennial from seed under **EACH** of the following headings:*

*i) propagation;*
*ii) containerisation and growing on;*
*iii) marketing.*

i) For the named herbaceous perennial plant selected, the answer required a detailed knowledge of the plants propagation from seed. Some candidates described their chosen plants' propagation by vegetative methods, for which no marks were awarded. Candidates were expected to sequence propagation by seed, referring to the type of compost, container or module, the time of year it is normally sown, the number of seeds per container or module, any special requirements, disease control and the germination temperature.

ii) Candidates were required to describe the plants stage of development, containerisation, size of container, and recommended suitable compost. Reference should also have been made to lining out, watering and feeding regime and the growing-on temperature and hardening-off for the award of full marks.

iii) This part of the question was poorly answered, candidates were expected to show a knowledge of plant preparation prior to marketing, checking for pests, diseases, damage and watering together with the inclusion of a care-card with the name of the plant.

*Q3. a) State the factors that influence the ultimate size of fruit trees.*

*b) Describe an annual maintenance programme to ensure maximum yield and quality.*

This was a popular question and reasonable well answered by those candidates that chose to attempt it. High marks were awarded to those candidates that structured and sequenced their answer with the following information.

a) Describing the correlation between rootstock, scion and soil type, together with suitable examples of dwarfing, semi-dwarfing and vigorous rootstocks and cultivars. Also mentioning the triploid and diploid effects on tree growth. Candidates were also expected to refer to, soil fertility, pruning regime, crop density, shelter, row orientation, aspect, presence of pests and diseases.

b) High marks were awarded by those candidates that referred in their answer to a specific method of pruning and its timing. Tying down branches, weed control, pest, disease and disorder control, including hail damage, timing the introduction of pollinators such as bees, irrigation and feeding, thinning fruit trees and care when harvesting.

*Q4. a) State the factors to be considered by the grower for marketing a **NAMED** crop of cut flower.*

*b) Assess the benefits to the grower and customer of specified post-harvest treatment.*

Few candidates that answered this question were awarded high marks, many answers were badly structured, sequenced and incomplete.

a) Having suitable facilities of packing and storage, the correct stage of harvesting for the named crop, the importance of continuity of supply, and the type of market outlets. Packaging and transportation between the nursery and retailer, customer feedback, processing and grading the crop, post-harvest treatment. Key calendar dates, marketing and promotions. The importance of having a skilled labour-force.

b) High marks were awarded where answers included the speed of delivery between harvesting and the packing shed for processing, cleaning, grading and bunching. Providing a range of grades for different market outlets resulting in less waste and a higher return for the grower. The importance of speedy transportation and secure packaging for the nursery to point of sale to ensure crop quality. Storing in conditions appropriate to the crop, in terms of temperature, humidity and the use of chemical treatments in the water to prolong shelf-life and later after being sold to the customer. By ensuring retailer and customer satisfaction in terms of crop quality and continuity of supply, the more likelihood of future business for the grower.

## Section C. Structured Questions (Protected Plant Production)

*Q5. a) Name **FOUR** plant nutrients required by protected crops and describe examples of deficiency symptoms for **EACH**.*

*b) Describe a method of application and stage of growth, when nutrients are best applied for a **NAMED** plant/crop.*

*c) Explain how the nutritional requirements of a plant can best be determined.*

Most candidates were able to name four plant nutrients, however only a few could give detailed examples of deficiency symptoms. Some candidates were confused about the symptom related to a particular nutrient.
Methods of application were poorly answered with little reference to the correct stage of growth of the plant or crop. Most candidates named an appropriate plant or crop.
Few candidates were able to provide a comprehensive explanation of how the nutritional requirements of a crop/plant could be determined. Most included soil analysis but only a few made reference to crop/plant specification and leaf analysis. Many candidates referred to deficiency systems with few explaining that by then damage or loss of growth would have occurred.

*Q6. a) Name **FOUR** different types of protective structures.*

*b) For **EACH** structure named in a), state both the constructional and cladding materials used.*

*c) Describe the suitability of **EACH** structure for the plant/crop grown.*

Most candidates were able to name four protective structures. Some provided a range of one type of structure a glasshouse or tunnel rather than contrasting types of structure, frame, cloche etc.
Constructional materials were less well known with few candidates appreciating the use of galvanised steel and aluminium in metal glasshouse structures. Where wood was included few candidates knew which types of wood and glasshouse thicknesses were confused. Some alternative type cladding material were given as examples such as polycarbonates and acrylics. The suitability of particular structures for plant/crop growth was generally well known. Sizes of structure were usually correctly related to plant/crop size and predicted environmental conditions within structures was commonly linked to appropriate plants/crops. There was some confusion in the suggested use of frames and cloches for a main season tomato crop by a few candidates.

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