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 **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, species and where appropriate, cultivar.

Module D

Outdoor Plant Production
Protected Plant Production

Section A – Short Answer Questions

Please turn over/……

ANSWER ALL QUESTIONS

Marks

Q1 List **FOUR** distinct fungal diseases in **NAMED** vegetable crops. **2**

.....

.....

.....

.....

.....

Q2 List **TWO** advantages and **TWO** limitations of sowing vegetable seeds into modules compared with direct drilling in open ground. **2**

.....

.....

.....

.....

.....

Q3 State **FOUR** main factors to be considered when equipping a vegetable packhouse. **2**

.....

.....

.....

.....

.....

Q4 List **FOUR** alternative outlets to supermarkets which are available to growers. **2**

.....

.....

.....

.....

.....

Please see over/……

ANSWER ALL QUESTIONS

Marks

Q5 State the optimum stage of harvesting for **EACH** of the following:

i) **ONE NAMED** top fruit;
ii) **ONE NAMED** soft fruit. **2**

……

……

……

……

……

Q6 State **THREE** reasons for the use of rootstocks when propagating top fruit, giving **ONE NAMED** example. **2**

……

……

……

……

……

Q7 State **FOUR** reasons why the control of atmospheric humidity is of importance in the greenhouse environment. **2**

……

……

……

……

……

Q8 State **FOUR** important factors to be considered when selecting a site for a tree and shrub nursery. **2**

……

……

……

……

Please turn over/……

ANSWER ALL QUESTIONS

Marks

Q9 Name **TWO** examples of natural and **TWO** examples of artificial windbreaks suitable for a nursery stock unit. **2**

.....

.....

.....

.....

.....

Q10 State **TWO** advantages and **TWO** limitations of organically produced produce for the consumer. **2**

.....

.....

.....

.....

.....

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 **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 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 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 a) Describe the main features to be considered when equipping a packhouse to deal with tree fruit crops. **10**

b) State the Health and Safety factors that must be considered when the packhouse is in operation. **10**

Q2 a) State the conditions that must be met by a grower in order to qualify for organic status. **4**

b) Review the advantages and limitations to the grower, of producing crops organically. **8**

c) Describe the range of pest, disease and weed control strategies available to the organic grower. **8**

Q3 Describe the field production of a **NAMED** salad crop, with reference to **EACH** of the following:

i) bed preparation; **4**
ii) propagation; **4**
iii) planting and aftercare; **4**
iv) pest, disease and weed control; **4**
v) harvesting. **4**

Q4 Prepare an annual maintenance plan for the care of nursery stock beds, grown to provide propagation material for the container production of a **NAMED** shrub. **20**

****

Please see over/…….

Section C – Protected Plant Production

Answer ONE question only from this section

Marks

Q5 a) Evaluate **FOUR** ways in which a grower can determine when a container grown plant requires watering. **4**

b) Describe **TWO** automated methods of irrigating a **NAMED** containerised crop, grown under protection. Include clearly-labelled diagrams to illustrate the answer. **12**

c) For **EACH** of the methods described in section b), list **TWO** advantages and **TWO** limitations. **4**

Q6 Describe the production of a **NAMED** seasonal bedding plant from seed with reference to **EACH** of the following:

i) propagation; **6**
ii) containerisation and growing-on; **6**
iii) crop health; **4**
iv) marketing. **4**

****

RHS (LEVEL 3) ADVANCED CERTIFICATE IN HORTICULTURE
WRITTEN EXAMINATION

Wednesday 8th February 2006

Module D

Outdoor Plant Production
Protected Plant Production

Examiners Comments

Candidates Registered	35		Total Candidates Passed		
Candidates Entered	30	85.72%	Passed with Commendation	15	50.00%
Candidates Absent	2	5.71%	Passed	14	46.67%
Candidates Deferred	1	2.86%	Failed	1	3.33%
Candidates Withdrawn	2	5.71%			

Section A – Short Answer Questions

Q1 List **FOUR** distinct fungal diseases in **NAMED** vegetable crops.

A number of candidates failed to give a NAMED vegetable. Some incorrect vegetable host examples were given. There was some confusion between downy & powdery mildew. A correct answer required four distinct fungal diseases of NAMED vegetables e.g. Botrytis on lettuce.

Q2 List **TWO** advantages and **TWO** limitations of sowing vegetable seeds into modules compared with direct drilling in open ground.

Candidates had several choices of advantages and limitations for this question. The advantages of sowing in modules included earlier production and harvesting, quicker establishment in the field and more precise use of seeds. Some candidates lost marks for stating that seeds “were too small” for sowing in modules and there was less chance of attacks from mice when sown under protection. Precautions would have to be taken against mice under protection.

Q3 State **FOUR** main factors to be considered when equipping a vegetable packhouse.

A well answered question where most candidates obtained full marks by giving four factors which could be selected from the following; a free flow system with a separate entrance for raw materials and an exit for final distribution. A separate area for cleaning and trimming raw material. A warm and clean area for grading and packing the vegetables for sale. Grading, weighing, washing equipment and fork lifts all aimed to produce a quality product as easily as possible.

Q4 List **FOUR** alternative outlets to supermarkets which are available to growers.

Most candidates were familiar with alternative outlets including wholesale markets, farm shops, greengrocers, hotels, farmers markets and processors.

Q5 State the optimum stage of harvesting for **EACH** of the following:

i) **ONE NAMED** top fruit;
ii) **ONE NAMED** soft fruit.

This question required a stage in harvesting – a date was not adequate e.g. "Apple Discovery harvest in late August" was not acceptable as a complete answer; an appropriate answer could have been: "when the apple leaves the tree easily as it is lifted gently in a cupped hand and given a slight twist."

Q6 State **THREE** reasons for the use of rootstocks when propagating top fruit, giving **ONE NAMED** example.

Generally a well answered question but some candidates failed to gain available marks by omitting to name a rootstock. Marks were accredited for naming a rootstock and indicating its use and effect on size of the tree. The actual benefits that rootstocks can provide include: some resistance to diseases, determine the eventual size of the tree(control vigour), as top fruit trees on their own roots have unpredictable vigour. Most fruit trees do not root easily from cuttings so the use of rootstocks is a more reliable method of propagation.

Q7 State **FOUR** reasons why the control of atmospheric humidity is of importance in the greenhouse environment.

Some candidates were unable to give FOUR reasons. The control of the atmosphere has some influence on pollination, pest and disease levels and rooting cuttings. Some candidates accurately stated that it is advisable to control the relative humidity at 85% and computers can be programmed to achieve this.

Q8 State **FOUR** important factors to be considered when selecting a site for a tree and shrub nursery.

All candidates were able to state FOUR important factors when selecting a site for a Tree and Shrub nursery. The avoidance of frost pockets, a sheltered site, well drained soil, good access for transport and the availability of services were all factors included by candidates.

Q9 Name **TWO** examples of natural and **TWO** examples of artificial windbreaks suitable for a nursery stock unit.

Species of beech, pine, alder, escallonia and hornbeam were stated as suitable examples of natural windbreaks. Artificial windbreaks including proprietary brands of plastic and plastic coated materials and trellis type fences.

Q10 State **TWO** advantages and **TWO** limitations of organically produced produce for the consumer.

A well answered questions. Advantages included the produce being free from pesticides, perceived healthier food, less chemicals being used – less pollution of the environment. Limitations include – more expensive to purchase, more blemishes and problems over availability.

Section B – Outdoor Plant Production

Q1 a) Describe the main features to be considered when equipping a packhouse to deal with tree fruit crops.
b) State the Health and Safety factors that must be considered when the packhouse is in operation.

a) Good marks were given to candidates who provided details of the main features required when equipping a packhouse. Several took a logical approach – fruit arriving at the packouse and going through stages of cleaning, size and quality grading for direct sales or transfer into a store before final packing. Some candidates assumed that basic services had been installed and others included the provision of these services, but in each case marks were awarded accordingly. Water flotation the use of automatic box fillers depending on the size of the enterprise gained additional marks.

b) There were some exceptional answers to this part of the questions. Marks were awarded for specifying the need for staff training including in a language which they could understand, (a reference to the number of foreign workers now employed in the industry). Safety guards for all equipment, protective clothing for all staff including the tie back of hair, personal hygiene when handling food. Clear warnings using the correct colour code for notices, risk assessment policy and details of any relevant Health & Safety Legislation, (there is an excellent DVD produced by HDC on safety in horticulture).

Q2 a) State the conditions that must be met by a grower in order to qualify for organic status.
b) Review the advantages and limitations to the grower, of producing crops organically.
c) Describe the range of pest, disease and weed control strategies available to the organic grower.

a) A very popular question: most candidates were aware of the conditions for qualification. The conversion period of **TWO** years, the regulation requiring membership of the Soil Association and learning how to manage the soil during this two year period were all points included in the answers gaining higher marks.
b) Advantages and limitations were understood by most candidates. Correct advantages include free advice, the availability of grants, generally higher price for produce and niche markets. Avoidance of the use of agrochemicals and minimum damage to the environment is of major importance. To gain a good mark on limitations candidates were expected to include increased labour, the two year qualification period, reduced yields and produce ill have more blemishes. Organic produce is usually more expensive in shops compare with traditional.
c) There were several control strategies available for the control of pests, diseases and weeds. Effective rotations, resistant varieties, several cultural techniques and the use of approved chemicals. Candidates were required to indicate an understanding of these strategies. Marks were not awarded to candidates who recommended companion planting as a control for pests as there is no scientific evidence to support this theory.

Q3 Describe the field production of a **NAMED** salad crop, with reference to **EACH** of the following:

i) bed preparation;
ii) propagation;
iii) planting and aftercare;
iv) pest, disease and weed control;
v) harvesting.

It is imperative that candidates NAME a salad crop. Most candidates chose some type of lettuce – butterhead, cos, crisp or iceberg. Salad onion as another choice, but radish and celery would also have been acceptable. Some candidates were fully aware of the propagation from either modules or direct drilling. Some candidates were not familiar with the range of sowing, planting and harvesting dates. Block raised transplants can be planted as early as the first week in March, depending on the weather and the area of the UK. Some were limited in knowledge to only two pests and diseases. Most candidates were aware of the need to transfer cut lettuce as soon as possible to the packing shed and the method of vacuum and ice bank cooling.

Q4 Prepare an annual maintenance plan for the care of nursery stock beds, grown to provide propagation material for the container production of a **NAMED** shrub.

It was essential that candidates NAMED a suitable shrub. The aim is to provide propagation material of good quality, free from pests and diseases and true to type. Annual maintenance must include: pruning, nutrition, irrigation, pest and disease control, weed control and final selection of suitable material for propagation purposes. Candidates who were able to demonstrate an understanding of these points and prepare an inclusive plan gained highest marks.

Section C – Protected Plant Production

Q5 a) Evaluate **FOUR** ways in which a grower can determine when a container grown plant requires watering.
b) Describe **TWO** automated methods of irrigating a **NAMED** containerised crop, grown under protection. Include clearly-labelled diagrams to illustrate the answer.
c) For **EACH** of the methods described in section b), list **TWO** advantages and **TWO** limitations.

a) Most candidates answered this part of the question well. Candidates stated how a grower could determine when to water but those who evaluated the methods gained most marks.
b) Descriptions of the irrigation systems were less well answered with some very poorly drawn and labelled diagrams. Some candidates confused liquid feeding with irrigation and provided detail of dilutors rather than the distribution of the irrigation water.
c) Both advantages and limitations of methods were well known by candidates once they had identified appropriate irrigation systems.

Q6 Describe the production of a **NAMED** seasonal bedding plant from seed with reference to **EACH** of the following:

i) propagation;
ii) containerisation and growing-on;
iii) crop health;
iv) marketing.

Answers generally lacked enough detail to attract high marks. For example: in the section headed up Propagation, where candidates were required to describe the conditions necessary for optimum germination few candidates provided accurate temperature ranges and details of sowing media. This lack of detail was also relevant to the other areas of the question in particular “containerisation and growing on” and “crop health”.

The section on marketing was answered in more detail with most candidates including reference to stage of crop, containers, compactness of growth, plant heath and vigour.

****