



Candidate Number: .....

Candidate Name: .....

Centre Number/Name: .....

## **RHS LEVEL 2 CERTIFICATE IN HORTICULTURE**

**Wednesday 21 February 2007**

**IMPORTANT - please read carefully before commencing.**

- i) The duration of the papers in Horticulture I is **1½ hours**;
- ii) **ALL** questions should be attempted in Section 1;
- iii) **EACH** question carries **2 marks**;
- iv) Write your answers legibly on the lines 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.

### **HORTICULTURE I – Planning, Principles & Production**

#### **Section 1 – Short Answer Questions**

**Please turn over .....**

**ALL** questions should be attempted.

**Marks**

**Q1** State **TWO** differences between angiosperms and gymnosperms.

**2**

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**Q2** Define **EACH** of the following terms:

- i) nucleus;
- ii) vacuole.

**2**

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**Q3** State **ONE** function of **EACH** of the following:

- i) root cap;
- ii) root hairs.

**2**

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**Q4** Define **EACH** of the terms:

- i) cross-pollination;
- ii) self-pollination.

**2**

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**Q5** State **TWO** advantages and **TWO** limitations of propagating plants from seed.

**2**

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**Q6** a) State **ONE** type of physical seed dormancy.

b) State **ONE** method of overcoming the type of dormancy named in a).

**2**

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**Q7** List **FOUR** factors to be considered when selecting material for vegetative plant propagation from softwood cuttings. **2**

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**Q8** State **TWO** advantages and **TWO** limitations of establishing vegetable crops by transplants. **2**

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**Q9** State **FOUR** benefits of rotating crops. **2**

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Please see over .....

**Q10** a) Define the technique of double digging.

b) State **TWO** advantages of double digging.

**2**

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**Q11** Describe **ONE** method of supporting a **NAMED** cane fruit.

**2**

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**Q12** State **FOUR** factors to be considered to ensure the successful storage of a **NAMED** top fruit.

**2**

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Please turn over .....

**Q13** State **TWO** operations carried out in the garden, which can be damaging to the environment.

**2**

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**Q14** State **FOUR** possible client requirements to consider when planning a garden for recreational use.

**2**

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**Q15** List **FOUR** factors which are identified in a site appraisal for the development of a new garden.

**2**

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## RHS LEVEL 2 CERTIFICATE IN HORTICULTURE

**Wednesday 21 February 2007**

**IMPORTANT - please read carefully before commencing.**

- i) The duration of the papers in Horticulture I is **1½ hours**;
- ii) Any **THREE** questions in Section 2 should be attempted;
- iii) **EACH** question carries **10 marks**;
- iv) Start **EVERY** new question on a separate answer booklet;
- 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.

### **HORTICULTURE I – Planning, Principles & Production**

#### **Section 2 – Structured Questions**

Please turn over .....

Answer **THREE** questions from this section.

		Marks
<b>Q16</b>	a) State <b>FOUR</b> conditions required for the germination of viable seed.	2
	b) Describe how the conditions noted in a), can be achieved in a protected environment.	4
	c) Describe the aftercare of seedlings from germination up to, but not including, pricking out.	4
<b>Q17</b>	a) Name <b>THREE</b> common types of stem cutting used in plant propagation.	3
	b) Describe the physical characteristics of <b>EACH</b> type mentioned in a).	3
	c) Describe the preparation and insertion of cuttings for a <b>NAMED</b> plant, using <b>ONE</b> of the examples identified in a).	4
<b>Q18</b>	a) Draw large clearly labelled diagrams to show the internal <b>AND</b> external structure of a dicotyledonous seed.	4
	b) State <b>TWO</b> characteristics of plants produced from F <sub>1</sub> hybrid seed.	2
	c) State <b>TWO</b> advantages and <b>TWO</b> limitations of F <sub>1</sub> hybrid seed.	4

Please see over .....



- Q19** a) List **FOUR** reasons for propagating top fruit on specific rootstocks. **4**
- b) Describe the technique used for establishing a **NAMED** top fruit under the following headings:
- i) site preparation; **2**
  - ii) planting; **2**
  - iii) support. **2**
- Q20** a) Describe the production of a **NAMED** root crop under the following headings:
- i) soil preparation and nutrition; **3**
  - ii) seed sowing and establishment; **3**
  - iii) pests, diseases and their control; **2**
  - iv) harvesting. **2**
- Q21** a) Describe **THREE** methods used in the completion of a simple linear survey. **7**
- b) For **EACH** method state the circumstances under which it would be used. **3**



# RHS LEVEL 2 CERTIFICATE IN HORTICULTURE

21 February 2007

## Horticulture I

<b>Candidates Registered</b>	1369	<b>Pass with Commendation</b>	446 (39.5%)
<b>Candidates Entered</b>	1128 (82.5%)	<b>Pass</b>	466 (41.5%)
<b>Absent/Withdrawn/Deferred</b>	241 (17.5%)	<b>Fail</b>	216 (19%)
<b>Total Candidates Passed</b>	912 (81%)		

### Senior Examiners Comments:

1. Candidates should be able to demonstrate a good range of plant knowledge and be able to give accurately named plant examples where appropriate. Common names and generic names are often too vague and cannot be rewarded in the positive manner that genus, species and where appropriate variety/cultivar can.
2. Candidates must be able to display accurate knowledge of the technical terms and concepts detailed in the syllabus, in the context of horticulture, and be aware that wider interpretation will not be rewarded.
3. The introductory rubric given on the first page of the question paper should be read carefully by candidates. Each year there is a significant number of candidates who ignore or misread the instructions given and consequently may not perform as well as they could have done. This is particularly so where candidates answer either more questions or more parts to a question than are required.
4. Candidates should pace themselves during each paper. The most successful candidates allow sufficient time to read the question thoroughly before answering it and also take time to read through their answers.
5. Candidates need to interpret key words within questions, particularly those such as state, list and describe. Questions requiring descriptions or explanations obviously require a more detailed answer than those requiring a list.
6. In the short answer sections it is important to ensure that responses are to the point and contained within the space allocated. Candidates should bear in mind that small sketches may be used to convey information more succinctly than words in some cases.
7. Successful candidates ensure that their answers to structured questions are focussed and to the point. It is disappointing when they cannot be rewarded for their efforts because the answer is irrelevant to the particular question. Candidates should take note of the mark allocation for specific sections and allocate their time and efforts accordingly.
8. Diagrams in structured questions can enhance an answer and, where appropriate, can replace detailed descriptions. They should be large, clear and well annotated, and preferably in pencil. Colour may be used successfully but only where it is relevant to the answer.

9. It is important that candidates have the opportunity to practice both short and structured questions. Ideally some practice should occur in time constrained situations, with appropriate feedback provided.
10. Candidates should be aware of the reading list of suggested books for the RHS (Level 2) Certificate in Horticulture is available from the Education Department.

### Examiners Comments:

#### Paper 1 - Short Answer Questions

Marks

- Q1. State **TWO** differences between angiosperms and gymnosperms. 2

Some excellent answers were given to this question. Many candidates showed a clear understanding of the differences in seed morphology between angiosperms and gymnosperms. However, marks were lost by failing to mention the difference between cone bearing and flowering plants. Some candidates did not answer the question or made wild guesses.

- Q2. Define **EACH** of the following terms:

- i) *nucleus*;  
ii) *vacuole*. 2

Many good answers were received, most candidates associating the cell nucleus with DNA. Many also understood the main characteristics of the vacuole.

- Q3. State **ONE** function of **EACH** of the following:

- i) *root cap*;  
ii) *root hairs*. 2

Most candidates correctly identified the protective function of the root cap. Many failed to mention that root hairs have the function of increasing effective root area, as well as being responsible for water uptake.

Q4. Define **EACH** of the terms:

- i) *cross-pollination;*
- ii) *self-pollination.*

2

Although there were some good answers to this question, many candidates failed to describe the transfer of pollen from the flower of one plant to the flower of a totally different plant. Some references were made to hermaphrodite and monoecious plants, but the process of pollen from the anthers falling on stigmas of the same plant was not well defined.

Q5. State **TWO** advantages and **TWO** limitations of propagating plants from seed.

2

Most candidates were fully aware of the advantages and limitations of growing plants from seed.

Q6. a) State **ONE** type of physical seed dormancy.

b) State **ONE** method of overcoming the type of dormancy named in a).

2

Many good answers were given, although confusion between physical and physiological dormancy was shown in some cases. Methods of scarification achieved full marks, but stratification did not.

Q7. List **FOUR** factors to be considered when selecting material for vegetative plant propagation from softwood cuttings.

2

Some good responses were given, but too many candidates failed to interpret the question correctly as referring to the selection of plant material for plant propagation, rather than to the process of taking cuttings.

Q8. State **TWO** advantages and **TWO** limitations of establishing vegetable crops by transplants.

2

Some candidates clearly understood the advantages and limitations of vegetable crop establishment from transplants. However, many lost marks by concentrating on aspects of catch cropping, rather than plant selection and intensive use of labour. Limitations were better understood, although it can be said that pests and diseases (unfortunately) affect both plants established from transplants and those sown in situ.

Q9. State **FOUR** benefits of rotating crops. 2

Most scripts showed a full understanding of the benefits of adopting a system of crop rotation.

Q10. a) Define the technique of double digging. 2  
b) State **TWO** advantages of double digging.

Some candidates had apparently practiced the technique of double digging, and gave good responses as a result. However, many answers failed to distinguish the process sufficiently from single digging. The relative advantages were also poorly understood.

Q11. Describe **ONE** method of supporting a **NAMED** cane fruit. 2

Many good scripts were seen from those candidates who were able to correctly name a cane fruit.

Q12. State **FOUR** factors to be considered to ensure the successful storage of a **NAMED** top fruit. 2

Excellent answers were generally given by those candidates able to correctly name a top fruit.

Q13. State **TWO** operations carried out in the garden, which can be damaging to the environment. 2

Most candidates took full advantage of the broad scope of this question, correctly identifying two environmentally damaging operations carried out in the garden.

Q14. State **FOUR** possible client requirements to consider when planning a garden for recreational use. 2

Most answers correctly identified example client requirements to be taken into account when planning a garden.

Q15. List **FOUR** factors which are identified in a site appraisal for the development of a new garden. 2

Provided there was no confusion with client requirements, this question was answered well, soil type, aspect, topography, underground services, access, and frost pockets being some of the aspects mentioned.

**Section 2 - Structured Questions** **Marks**

Q16. a) State **FOUR** conditions required for the germination of viable seed. 2

b) Describe how the conditions noted in a), can be achieved in a protected environment. 4

c) Describe the aftercare of seedlings from germination up to, but not including, pricking out. 4

a) Most candidates were able to state four conditions for successful germination of seeds, although some marks were lost for imprecise statements such as 'temperature' or 'light'.

b) Answers to this section were generally good, although some candidates failed to state the need for moisture retentive compost, and the need to cover or not cover the seed as appropriate.

c) Disappointingly, many scripts showed a lack of understanding of the procedures for the aftercare of germinated seedlings. Very few candidates discussed the need for weaning off or reduction in basal temperature prior to pricking out. However the need to check for pests and diseases, and watering were better described.

Q17. a) Name **THREE** common types of stem cutting used in plant propagation. 3

b) Describe the physical characteristics of **EACH** type mentioned in a). 3

c) Describe the preparation and insertion of cuttings for a **NAMED** plant, using **ONE** of the examples identified in a). 4

- a) Most answers gave the three common types of stem cutting and gained full marks.
- b) Most responses were satisfactory, but marks were lost by failing to provide essential detail, for example of the degree of lignification of the respective material, and the use of flowering shoots.
- c) This section was generally answered well. Where marks were lost, again it was due to lack of detail, for example position of cuts, use of hormone rooting materials, type of compost to be used, labelling, watering etc.

Q18. a) *Draw large clearly labelled diagrams to show the internal **AND** external structure of a dicotyledonous seed.* 4

b) *State **TWO** characteristics of plants produced from  $F_1$  hybrid seed.* 2

c) *State **TWO** advantages and **TWO** limitations of  $F_1$  hybrid seed.* 4

a) Many candidates achieved high marks for drawing an accurately labelled diagram. However, some drawings were of poor quality, and often too small, with consequently lower scores.

b) Most answers provided two characteristics, but marks were lost by failure to relate statements to the parent plants, or suggest that the plants produced are genetically uniform.

c) A number of scripts referred to characteristics again rather than advantages and limitations. Many only gave one example.

Q19. a) *List **FOUR** reasons for propagating top fruit on specific rootstocks.* 4

b) *Describe the technique used for establishing a **NAMED** top fruit under the following headings:*

- i) *site preparation;* 2
- ii) *planting;* 2
- iii) *support.* 2

a) This section was generally well answered, with the exception of a few scripts where a full range of reasons for propagation on specific rootstocks was not given.

b) i) Many candidates discussed the criteria for site selection and not site preparation. There was little mention of the removal of perennial weeds or adjustment of pH.

- ii) Lack of essential detail lost marks for many candidates. For example here was often lack of mention of depth of planting, root spreading, firming etc.
- iii) Again lack of detail meant that scores were reduced. Stake positioning, the use and loosening of ties were often poorly covered.

Q20. a) Describe the production of a **NAMED** root crop under the following headings:

- i) soil preparation and nutrition; 3
- ii) seed sowing and establishment; 3
- iii) pests, diseases and their control; 2
- iv) harvesting. 2

Most candidates chose carrots, with a proportion describing potato cultivation. This latter was accepted in this instance, although it should be noted that the crop consists of stem tubers, and is mentioned separately in the syllabus. Brassicas and other crops (not generally grown for a root harvest) were not accepted.

- i) Scripts giving essential detail, for example the timing of cultivations, fertilizers and rates of application, weed control etc. Many candidates described site selection, which was not accorded any marks.
- ii) Good answers were generally seen, but in some there was a lack of detail on depth of drill, distance between drills, weed control and thinning.
- iii) Almost all candidates were able to describe one pest, but a smaller proportion was able to detail a second.
- iv) Many candidates lost marks as they failed to mention the tools used to lift the crop, removal of the tops and excess soil, as well as the avoidance of damage.

Q21. a) Describe **THREE** methods used in the completion of a simple linear survey. 7

b) For **EACH** method state the circumstances under which it would be used. 3

A large proportion of the few candidates who attempted this question achieved high marks.

- a) Many answers lacked clear diagrams, which would have done much to clarify the explanations.



- b) Almost all candidates were able to state the circumstances under which each method would be used.

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