



Candidate Number: .....

Candidate Name: .....

Centre Number/Name: .....

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

**Thursday 28 June 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**    **Do not  
write  
in this  
margin**

**Q1**    Define transpiration.

**2**

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**Q2**    Define **EACH** of the following terms in relation to pollination/fertilisation in higher plants:

- i)    'incompatible';
- ii)   'compatible'.

**2**

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**Q3**    a)    Define the term 'stomata'.

      b)    State **ONE** function of the stomata in leaves.

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**Marks**    **Do not  
write  
in this  
margin**

**Q4**    Define the following terms in relation to vegetative propagation by cuttings:

- i)    'semi-ripe';
- ii)   'softwood'.

**2**

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**Q5**    List **FOUR** factors that influence the successful rooting of stem cuttings.

**2**

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**Q6**    State **TWO** reasons for weaning rooted stem cuttings.

**2**

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**Q7** State **FOUR** precautions which should be undertaken when using hand-tools in the garden.

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**Q8** Name **TWO** different materials which may be used as artificial windbreaks.

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**Q9** State **TWO** methods of extending the natural season of a **NAMED** salad crop.

2

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Marks Do not write in this margin

**Q10** State **TWO** advantages and **TWO** limitations of using the bed system for growing outdoor vegetables.

**2**

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**Q11** Describe the symptoms of attack by a **NAMED** pest on a **NAMED** top fruit.

**2**

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**Q12** State **FOUR** factors that should be considered when harvesting top fruit.

**2**

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Please turn over .....

**Q13** Define the term 'client brief' in relation to garden planning.

**2**

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**Q14** State **TWO** reasons for considering existing site characteristics and features when developing a garden plan.

**2**

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**Q15** In relation to garden planning, define the terms:

- i) 'formal';
- ii) 'informal'.

**2**

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## RHS LEVEL 2 CERTIFICATE IN HORTICULTURE

Thursday 28 June 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 **EACH** 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.

		<b>Marks</b>
<b>Q16</b>	a) Define the terms:	
	i) 'woody perennial';	<b>2</b>
	ii) 'herbaceous perennial'.	<b>2</b>
	b) Describe the internal changes that occur in a dicotyledonous stem during secondary thickening, using clearly labelled diagrams.	<b>6</b>
<b>Q17</b>	a) Describe the collection and separation of seed from a <b>NAMED</b> woody plant.	<b>6</b>
	b) State <b>FOUR</b> conditions needed to store a range of seed successfully.	<b>4</b>
<b>Q18</b>	a) State <b>FOUR</b> benefits of adopting crop rotation.	<b>4</b>
	b) Describe using <b>NAMED</b> vegetable groups, <b>ONE</b> system of crop rotation, identifying plant requirements over a <b>FOUR</b> year period.	<b>6</b>
<b>Q19</b>	Describe how unity is achieved in garden planning using <b>EACH</b> of the following factors:	
	i) rhythm;	<b>2</b>
	ii) balance;	<b>2</b>
	iii) scale and proportion;	<b>4</b>
	iv) colour.	<b>2</b>

Please see over .....



- Q20** Describe how **EACH** of the following factors can affect the successful cultivation of a **NAMED** top fruit.
- i) frost; **3**
  - ii) shelter; **3**
  - iii) soil. **4**
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- Q21**
- a) State **TWO** reasons for carrying out a site appraisal, prior to planning a garden. **2**
  - b) Identify **FOUR** site features which have associated risks. **4**
  - c) Describe how **EACH** of the risks in b), can be minimised by careful garden planning. **4**

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The Royal Horticultural Society, Wisley, Woking, Surrey GU23 6QB



## RHS LEVEL 2 CERTIFICATE IN HORTICULTURE

28 June 2007

### Horticulture I

<b>Candidates Registered</b>	1683	<b>Pass with Commendation</b>	382 (27%)
<b>Candidates Entered</b>	1434 (85%)	<b>Pass</b>	719 (50%)
<b>Absent/Withdrawn/Deferred</b>	249 (15%)	<b>Fail</b>	333 (23%)
<b>Total Candidates Passed</b>	1101 (77%)		

#### 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.
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. In each examination, it is clear that a proportion of candidates are ill prepared to answer papers of the type set. It is essential that candidates have the opportunity to practice both short and structured questions. Ideally some papers should be answered in a time-constrained situation. Appropriate feedback must, in any case, be 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 RHS Qualifications.

### Examiners Comments:

<b>Paper 1 - Short Answer Questions</b>	<b>Marks</b>
<p>Q1. <i>Define transpiration.</i></p> <p>Most candidates showed an understanding of the flow of water from the roots to the rest of the plant. However, many failed to fully describe water loss from the leaf, and that the gradient of humidity from inside to outside which influences the rate of transpiration.</p>	<b>2</b>
<p>Q2. <i>Define <b>EACH</b> of the following terms in relation to pollination/fertilisation in higher plants:</i></p> <p style="margin-left: 40px;">i) <i>'incompatible'</i> ii) <i>'compatible'</i></p> <p>Well answered by a majority of candidates. However there was confusion in some cases with self-fertile, monoecious, and dioecious plants.</p>	<b>2</b>
<p>Q3. a) <i>Define the term 'stomata'.</i> b) <i>State <b>ONE</b> function of the stomata in leaves</i></p> <p>Good answers were received from many candidates, but some scripts confused transpiration with respiration. Full marks were awarded to those answers that included a reference to guard cells.</p>	<b>2</b>
<p>Q4. <i>Define the following terms in relation to vegetative propagation by cuttings:</i></p> <p style="margin-left: 40px;">i) <i>'semi-ripe';</i> ii) <i>'softwood'.</i></p>	<b>2</b>

Some good responses were received, but many candidates appeared to be confused by the order in which the two terms were listed. Reference to the time of year when each type of cutting is taken was often not made. Many answers showed a lack of understanding of the subject.

- Q5. *List **FOUR** factors that influence the successful rooting of stem cuttings.* **2**

Well answered by most candidates, although many incorrectly referred to the need for nutrients in the rooting medium.

- Q6. *State **TWO** reasons for weaning rooted stem cuttings.* **2**

Some good answers were given, which mentioned hardening off rooted cuttings with reference to temperature, humidity, and composts containing mineral nutrients. Disappointingly many scripts indicated a lack of knowledge of 'weaning' in a horticultural context.

- Q7. *State **FOUR** precautions which should be undertaken when using hand-tools in the garden.* **2**

Most candidates were well aware of the precautions needed when using garden hand tools. Electrically operated tools did not fall within the scope of the question. Personal protective clothing was regarded as one precaution, rather than marks being awarded for separate items such as boots and gloves.

- Q8. *Name **TWO** different materials which may be used as artificial windbreaks.* **2**

Good answers suggested that the windbreak needed to have a degree of wind permeability. Those who simply mentioned materials, such as brick or wood lost marks. A proportion of scripts wrongly cited trees and shrubs.

- Q9. *State **TWO** methods of extending the natural season of a **NAMED** salad crop.* **2**

Some good responses were given. But on the whole the answers were very variable. Some candidates failed to name a crop, while others gave inappropriate examples such as spinach and carrots. Mention of the use of greenhouses, frames or cloches, or the use of different cultivars to give early, mid-season, or late crops was rewarded.

- Q10. *State **TWO** advantages and **TWO** limitations of using the bed system for growing outdoor vegetables.* **2**

Most candidates were aware of the benefits and limitations. However some responses were not sufficiently specific, for example crop rotation, and susceptibility to pests are not unique to bed systems of vegetable cultivation.

Q11. Describe the symptoms of attack by a **NAMED** pest on a **NAMED** top fruit. 2

Most candidates were able to describe the symptoms of attack of, for example, Codling Moth on apple. Those who described the life cycle or who failed to name a top fruit lost marks.

Q12. State **FOUR** factors that should be considered when harvesting top fruit. 2

Health & Safety, degree of ripeness, weather conditions, and the selection of undamaged fruit all received reward. However conditions for successful fruit storage did not.

Q13. Define the term 'client brief' in relation to garden planning. 2

Most candidates answered this question well, most giving good examples of items for discussion such as intended use of the garden, maintenance level and features envisaged. No marks were awarded for suggestions that the client brief was the designer telling the client what would happen.

Q14. State **TWO** reasons for considering existing site characteristics and features when developing a garden plan. 2

Another well answered question, with some good examples and reasons for considering the existing features and characteristics of the site when drawing up a development plan.

Q15. In relation to garden planning, define the terms:

- i) 'formal';
- ii) 'informal'. 2

Many good answers were given to this question, with excellent definitions, backed by examples.

## Section 2 - Structured Questions

Marks

- Q16. a) *Define the terms:*
- i) *'woody perennial'* 2
  - ii) *'herbaceous perennial'* 2
- b) *Describe the internal changes that occur in a dicotyledonous stem during secondary thickening, using clearly labelled diagrams.* 6

Although some good scripts were seen, many candidates failed to score high marks:

- a) There was often a failure to state if secondary thickening did or did not take place. A significant number did not suggest that both types of plant have life cycles continuing for more than two years. However, most were aware of the existence of a permanent framework, remaining above ground in winter in the case of woody perennials.
- b) Many disappointing answers were received. There were very few clear diagrams, which would have made presentation of this section much more effective. Although many referred to xylem, phloem, and cambium, the development of these tissues during secondary thickening was poorly understood. However most candidates were able to describe the end result, with due reward.

- Q17. a) *Describe the collection and separation of seed from a **NAMED** woody plant.* 6
- b) *State **FOUR** conditions needed to store a range of seed successfully.* 4

A disappointing question, due to lack of detail and explanation of the statements made.

- a) Only a few candidates fully identified the plant being described. The need to collect seed from healthy plants was neglected by many, as was the need for a detailed description of seed separation. The need to fully dry seed before storage was not emphasised, neither was the need for accurate identification and labelling.
- b) Most candidates were able to state three conditions for successful seed storage, but failed to qualify them as is required in a structured question. Few answers stated that storage should be free from vermin. Marks could not be awarded for details of seed sowing etc.

- Q18. a) *State **FOUR** benefits of adopting crop rotation.* 4
- b) *Describe using **NAMED** vegetable groups, **ONE** system of crop rotation, identifying plant requirements over a **FOUR** year period.* 6

A popular question, with the first part well answered and the second less so.

- a) Most candidates were able to state suitable benefits of crop rotation.
- b) The majority of answers gave four credible crop groups and showed how they could be rotated over four years. Most also gave fairly good information concerning plant problems and requirements, but there was a distinct lack of detail on specific nutrients needed for each group of crops.

Q19. Describe how unity is achieved in garden planning using **EACH** of the following factors:

- i) *rhythm;* 2
- ii) *balance;* 2
- iii) *scale and proportion;* 4
- iv) *colour.* 2

Many candidates chose to answer this question, but high marks were not awarded to all. Scripts showed a tendency to waffle, and repeat themselves in different words. Poorly structured explanations, lacking in detail and concrete examples, resulted in loss of marks.

Q20. Describe how **EACH** of the following factors can affect the successful cultivation of a **NAMED** top fruit.

- i) *frost;* 3
- ii) *shelter;* 3
- iii) *soil.* 4

A satisfactory standard was achieved by many.

- i) Most scripts made two valid points, although many failed to mention leaf scorch as a result of frost damage.
- ii) Most candidates were able to suggest two reasons for the provision of shelter. However some described shelterbelts and windbreaks, without reward.
- iii) There was a general lack of detail about soils, particularly in regard to the effect pH has upon cultivation. Most answers mentioned drainage and nutrition.

Q21. a) State **TWO** reasons for carrying out a site appraisal, prior to planning a garden. 2

b) Identify **FOUR** site features which have associated risks. 4

c) Describe how **EACH** of the risks in b) can be minimised by careful garden planning. 4

- a) Most responses identified two valid reasons for completing a site appraisal.
- b) Four site features could usually be identified, but failing to describe the associated risk factors lost marks.
- c) Those candidates who had clearly identified the site features and risks in b) were able to describe how those risks could be minimized.

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RHS Qualifications, RHS Garden, Wisley, Woking, Surrey, GU23 6BQ.  
Tel: 0845 260 9000 – Fax: 01483 212382

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