



RHS LEVEL 2 CERTIFICATE IN HORTICULTURE

Wednesday 17 February 2010
2.00pm – 3.30pm

HORTICULTURE II – Ornamental, Principles & Maintenance

Section 1 – Short Answer Questions

Candidate Number:

Candidate Name:

Centre Number/Name:

IMPORTANT - Please read carefully before commencing:

- i) The duration of the papers in Horticulture II 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 metric measurements **ONLY**;
- vi) Where plant names are required, they should include genus, species and where appropriate, cultivar.

Please turn over

ALL questions should be attempted.

		Marks	Do not write in this margin
Q1	a) Define the term 'soil texture'.		
	b) List TWO distinct types of soil texture.	2	
		
		
		
		
		
Q2	State TWO ways of improving soil structure and TWO ways in which it may be damaged.	2	
		
		
		
		
		
Q3	List FOUR bulky organic materials used for soil amelioration and/or mulching.	2	
		
		
		
		
		

Please see over

Marks

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- Q4** State **FOUR** ways in which the use of protected structures can be detrimental to the environment.

2

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- Q5** State **ONE** benefit and **ONE** limitation of **EACH** of the following structural materials used for the construction of protected structures, using the table below.

2

Material	Benefits	Limitations
Aluminium alloy		
Steel		

- Q6** State **FOUR** measures that can be taken to minimize damage by pests and diseases in the protected environment.

2

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Please turn over

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Q7 State **FOUR** health hazards to be considered when handling plants.

2

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Q8 Name **TWO** plants suitable for temporary display in a small border for **EACH** of the following seasons, using the table below.

2

Spring	Summer

Q9 Name and describe **TWO** woody plants which have been grown or selected for their attractive bark.

2

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Please see over

Marks

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Q10 Name and describe **TWO** shrubs grown for their attractive flowers.

2

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Q11 a) State **TWO** characteristics of plants used for ground cover.

b) Name **ONE** woody and **ONE** herbaceous plant suitable for ground cover planting.

2

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Q12 Define **EACH** of the **TWO** methods of applying fertilizer and state the season of application, in the maintenance of plants in an herbaceous border, using the table below.

2

Method	Definition	Season
Top dressing		
Liquid feeding		

Please turn over

Q13 State the stages in the life cycle of **ONE NAMED** fungal disease. **2**

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Q14 State **ONE** chemical method used for the control of a **NAMED** pest in a **NAMED** crop. **2**

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Q15 a) State a physical method of control for **EACH** weed type:
 i) annual;
 ii) perennial.

b) Name **ONE** plant example for **EACH**. **2**

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**The Royal Horticultural Society, Wisley, Woking, Surrey GU23 6QB
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RHS LEVEL 2 CERTIFICATE IN HORTICULTURE

Wednesday 17 February 2010
2.00pm – 3.30pm

HORTICULTURE II – Ornamental, Principles & Maintenance

Section 2 – Structured Questions

IMPORTANT - Please read carefully before commencing:

- i) The duration of the papers in Horticulture II 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 metric measurements **ONLY**;
- vi) Where plant names are required, they should include genus, species and where appropriate, cultivar.

Please turn over

Answer **THREE** questions from this section.

		Marks
Q16	a) Define the terms 'primary' and 'secondary' cultivations.	2
	b) State ONE purpose of EACH of the cultivation methods and the season in which they are carried out.	4
	c) State TWO benefits and TWO limitations of EACH method of cultivation.	4
Q17	a) Define the term 'soil pH'.	1
	b) State the pH range that supports plant growth in mineral soils.	1
	c) State TWO distinct methods by which soil pH may be changed.	4
	d) Define the terms 'calcifuge' and 'calcicole' and name ONE plant example for EACH .	4
Q18	a) Describe TWO practical operations associated with growing a NAMED salad crop under protection.	2
	b) For EACH of the operations described in a), state TWO possible hazards.	4
	c) For EACH of the hazards identified in b), state how the risks of injury may be minimised.	4
Q19	a) State THREE benefits and THREE limitations of establishing a lawn from turf relative to seed.	6
	b) Describe the maintenance of a new lawn grown from seed.	4

Please see over

- Q20**
- a) Name and describe **ONE** summer flowering hardy annual to be grown out of doors. **1**
 - b) Describe the cultivation of the plant named in a) under **EACH** of the following headings:
 - i) site selection; **1**
 - ii) soil preparation; **2**
 - iii) sowing methods; **4**
 - iv) maintenance during establishment. **2**
- Q21**
- a) Name **ONE** example of **EACH** of the following disease organisms when they affect plants:
 - i) fungus; **1**
 - ii) bacterium; **1**
 - iii) virus. **1**
 - b) State **ONE** method of spread for **EACH** of the diseases named in a). **3**
 - c) Describe **TWO** different control methods for **ONE** of the diseases named in a). **4**

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RHS LEVEL 2 CERTIFICATE IN HORTICULTURE

17 February 2010

Horticulture II

Candidates Registered	509	Pass with Commendation	178 (45.64)
Candidates Entered	390	Pass	148 (37.94)
Absent/Withdrawn/Deferred	119	Fail	64 (16.41)
Total Candidates Passed	236		

Senior Examiner's 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. At each examination, there are 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. Regrettably, some candidates quoted Imperial measurements in their answers, when required specifically to use Metric units.
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 might 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 which is available from the Qualifications Department and can also be found on the RHS website together with past examination papers.

Examiners' Comments:

Section 1 - Short Answer Questions		Marks
Q1	<p>a) <i>Define the term 'soil texture'.</i></p> <p>b) <i>List TWO distinct types of soil texture.</i></p> <p>a) Some good answers were given, but there was evidence of confusion between the terms 'soil texture' and 'soil structure'. Some reference to soil composition was often made, but few responses made reference to the size and percentage of soil particles.</p> <p>b) Many soil textural classes were correctly named e.g. sand, clay, loam and silt. Generalizations such as 'sandy' were not rewarded.</p>	2
Q2	<p><i>State TWO ways of improving soil structure and TWO ways in which it may be damaged.</i></p> <p>A pleasingly well answered question. Correctly stated methods of improvement include: incorporation of organic matter, addition of lime to induce flocculation, digging/cultivation. Damage can be caused for example by over cultivation, working soil under unsuitable conditions, and generation of cultivation pans.</p>	2
Q3	<p><i>List FOUR bulky organic materials used for soil amelioration and/or mulching.</i></p> <p>Most candidates scored well with a list including, for example, farmyard manure, garden compost, bark chips, composted bark, coir and leaf mould. Peat was not accepted.</p>	2

- Q4** State **FOUR** ways in which the use of protected structures can be detrimental to the environment. **2**

In view of the wide range of possible answers, some candidates experienced difficulty in presenting a logical response. Possible answers included: use of fossil fuels for heating, aesthetics, high demand for water, fossil fuels used in the manufacture of materials used in the structure. Some answers referred correctly to the build up of pests/diseases under protection in turn threatening the external environment.

- Q5** State **ONE** benefit and **ONE** limitation of **EACH** of the following structural materials used for the construction of protected structures, using the table below. **2**

Material	Benefits	Limitations
<i>Aluminium alloy</i>		
<i>Steel</i>		

Well answered in the majority of cases. The benefits of complex cross sections in the relatively expensive aluminium alloy were widely quoted, as was the need to protect the stronger steel from corrosion.

- Q6** State **FOUR** measures that can be taken to minimize damage by pests and diseases in the protected environment. **2**

Well answered, although some candidates sacrificed marks to extreme brevity, stating 'ventilation' for example without qualification.

Marks were awarded for evidence of understanding of concepts such as, use of biological control agents, hygienic practices (e.g. cleaning pots, removal of weeds, correct use of pesticides, use of sticky traps, mouse traps etc).

- Q7** State **FOUR** health hazards to be considered when handling plants. **2**

Regrettably, some candidates interpreted this question as referring to plants, (which was not rewarded), and not to personnel. Some correct examples include: Toxic plants (e.g. *Taxus baccata*), Thorny plants (e.g. *Rosa sp.*), Back injury – heavy pots, eye injury – canes, tetanus from soil.

- Q8** Name **TWO** plants suitable for temporary display in a small border for **EACH** of the following seasons, using the table below.

2

Spring	Summer

Well answered where plants were completely named. Acceptable answers included:

SPRING	SUMMER
<i>Narcissus 'Tete a Tete'</i>	<i>Begonia semperflorens</i>
<i>Bellis perennis</i>	<i>Tagetes patula</i>
<i>Erysimum cheri</i>	<i>Calendula officinalis</i>
<i>Primula vulgaris</i>	<i>Lobelia erinus</i>

- Q9** Name and describe **TWO** woody plants which have been grown or selected for their attractive bark.

2

Some excellent demonstrations of plant knowledge were seen. However, many of the descriptions given were too vague to be awarded full marks, particularly when they referred only to the bark. Examples were: *Acer griseum*, *Prunus serrula*, *Betula utilis* var. *jacquemontii*, *Cornus alba* 'Sibirica'.

- Q10** Name and describe **TWO** shrubs grown for their attractive flowers.

2

Some good descriptions were seen, but many were vague and not capable of reward. (e.g. 'nice shape').

- Q11** a) State **TWO** characteristics of plants used for ground cover.
b) Name **ONE** woody and **ONE** herbaceous plant suitable for ground cover planting.

2

- a) Many candidates correctly stated that ground cover plants should have two of the following characteristics: Evergreen, low maintenance, long lived, and fully hardy.
b) A good knowledge of woody plants for this purpose was shown, with good examples (e.g. *Hypericum calycinum*) provided. However the use of herbaceous plants (e.g *Geranium* 'Johnson's Blue') for this purpose was less well understood.

- Q12** Define **EACH** of the **TWO** methods of applying fertilizer and state the season of application, in the maintenance of plants in an herbaceous border, using the table below.

2

Method	Definition	Season
Top dressing		
Liquid feeding		

The seasons for the application of fertiliser by different methods were generally correctly identified although the actual methods used were poorly defined in many cases.

Top dressing was confused with the application of bulky materials, and liquid feeding with foliar application.

- Q13** State the stages in the life cycle of **ONE NAMED** fungal disease.

2

Many candidates were able to correctly name a fungal plant disease. (e.g. Potato Blight, Rose Black spot) Fewer could outline the life cycle as the germination of reproductive spores to produce vegetative hyphae, which, in turn give rise to reproductive spores.

- Q14** State **ONE** chemical method used for the control of a **NAMED** pest in a **NAMED** crop.

2

Full marks were achieved by a minority of candidates. Slugs in a variety of crops were quoted by many, but the active ingredient of 'slug pellets' eluded many. (Metaldehyde).

- Q15** a) State a physical method of control for **EACH** weed type:
i) annual;
ii) perennial.

- b) Name **ONE** plant example for **EACH**.

2

A well answered question, spoilt, in some cases by lack of attention to detail. For example simple pulling of *Urtica dioica* will not control it, neither will attempts to smother *Taraxicum officinale* with carpet.

Section 2 – Structured Questions**Marks**

- Q16**
- a) Define the terms 'primary' and 'secondary' cultivations. **2**
 - b) State **ONE** purpose of **EACH** of the cultivation methods and the season in which they are carried out. **4**
 - c) State **TWO** benefits and **TWO** limitations of **EACH** method of cultivation. **4**
- a) Most scripts successfully differentiated between these terms and illustrated a basic understanding of the importance of them. In particular relating to the timing of cultivations and the likely effects on soil condition and plant growth.
- b) There was some confusion as to their primary purpose with few responses explaining in full the usefulness of the exposure to natural weathering during the winter period. The benefits of sufficient frost exposure were underestimated in the success of secondary cultivations.
- c) Some candidates found it difficult to provide sufficiently different benefits and limitations to avoid confusion between them.
- Q17**
- a) Define the term 'soil pH'. **1**
 - b) State the pH range that supports plant growth in mineral soils. **1**
 - c) State **TWO** distinct methods by which soil pH may be changed. **4**
 - d) Define the terms 'calcifuge' and 'calcicole' and name **ONE** plant example for **EACH**. **4**
- a) Most candidates indicated that pH related to the acidity or alkalinity of the soil, however there was some confusion over the meaning of the scale and few included references to the soil solution and/or hydrogen ions in their answers.
- b) Many responses were approximately right, but few defined the exact range from 4.5 to 8.5
- c) Candidates in the main were able to identify suitable materials for both lowering and raising pH values. In some cases the naming and description of materials was not specifically detailed to be able to award high marks.
- d) Most candidates had a correct understanding of the terms and were able to provide an adequate definition. Marks were lost by candidates being unable to provide correct botanical names for the plant examples given.

Q18	a) Describe TWO practical operations associated with growing a NAMED salad crop under protection.	2
	b) For EACH of the operations described in a), state TWO possible hazards.	4
	c) For EACH of the hazards identified in b), state how the risks of injury may be minimised.	4
	a) Marks were awarded providing candidates selection was a salad crop and the practical operation related to that particular crop. Many of the descriptions were very brief and did not adequately describe the operation.	
	b) There was some misunderstanding over precisely what a hazard was. Some candidates began to further describe the operation while others focused on the likely frequency of carrying out the task rather than identifying the two possible hazards asked for in the question.	
	c) Well answered where candidates clearly identified the original operations. Where candidates provided confused and muddled descriptions of the operations then statements of how the hazards could be reduced were equally poor.	
Q19	a) State THREE benefits and THREE limitations of establishing a lawn from turf relative to seed.	6
	b) Describe the maintenance of a new lawn grown from seed.	4
	a) In most responses, appropriate benefits and limitations were identified. However some candidates misinterpreted the question and focussed on the benefits and limitations of establishing a lawn from seed.	
	b) This part of the question caused the most confusion. Many candidates seemed to overlook the fact that it was a <i>new</i> lawn raised from seed. Reference to high levels of feeding, close mowing, scarification and top dressing were included in many of the answers. Descriptions were poor and lacked detail with very short statements or lists consisting of only one word in some cases.	
Q20	a) Name and describe ONE summer flowering hardy annual to be grown out of doors.	1
	b) Describe the cultivation of the plant named in a) under EACH of the following headings:	
	i) site selection;	1
	ii) soil preparation;	2
	iii) sowing methods;	4
	iv) maintenance during establishment.	2

- a) Some excellent responses were seen. Unfortunately, a proportion of candidates named plants which are not classed as summer hardy annuals. Some of those who did name an appropriate plant then lost marks through poor and inaccurate descriptions.
- b)
 - i) Descriptions were required to achieve good marks in this section; several candidates simply listed the factors related to site selection without providing any further details. An open sunny site was often included in the answers but the avoidance of frost pockets was frequently overlooked.
 - ii) Some good detailed descriptions were given by some candidates. However, cultivations were often not described in logical sequence and some important ones were completely overlooked.
 - iii) Not all candidates provided more than one method although the question did ask for methods. Descriptions were very brief and did not include the facts necessary to attract high marks. Depths of drills were often not specified.
 - iv) Some candidates misunderstood the question and did not limit their answers to the period of establishment dealing with issues such as dead heading and plant clearance. Many answers lacked sufficient detail.

Q21 a) Name **ONE** example of **EACH** of the following disease organisms when they affect plants:

- i) fungus; 1
- ii) bacterium; 1
- iii) virus. 1

b) State **ONE** method of spread for **EACH** of the diseases named in a). 3

c) Describe **TWO** different control methods for **ONE** of the diseases named in a). 4

a) A few candidates were unable to provide examples or they were confused naming examples but attributing them to the wrong type of disease organism.

b) Those candidates who did concentrate on the spread of the disease scored well. Some, however, focussed on the symptoms rather than the method of spread as specified in the question. Some also overlooked the necessity to identify the actual part of the organism responsible e.g. spores for fungal diseases.

c) Candidates had a good understanding of physical and other non chemical control methods which were explained well. A few candidates seemed unable to provide two sufficiently different control methods stating removal of two different infected parts of the plant as different control methods.

