



**R2114**

**UNDERSTANDING PROTECTED ENVIRONMENTS  
AND THEIR USE IN PLANT CULTIVATION**

**Tuesday 15 February 2011**

**14.30 – 15.00**

**Written Examination**

**Candidate Number:** .....

**Candidate Name:** .....

**Centre Number/Name:** .....

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

- i) The duration of this paper is **30 minutes**;
- ii) **ALL** questions should be attempted;
- iii) **EACH** question carries **10 marks**;
- iv) Write your answers legibly in the spaces provided;
- v) Use metric measurements only;
- vi) Where plant names are required, they should include genus, species and where appropriate, cultivar.

## Answer all questions

Marks

1. a) Name and describe **TWO** protected structures which can be used when growing plants.

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- b) Describe **TWO** horticultural uses for **EACH** structure listed in a).

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Please see over .....

2. a) Name and describe the properties of **THREE** distinct cladding materials which can be used for protected structures.

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- b) Describe the effect of **EACH** of the following environmental factors on plants in a protected environment:

- i) temperature;
- ii) light.

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Please turn over .....

3. a) Name **TWO** pests of a **NAMED** decorative pot plant which can be grown in a protected environment.

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- b) State **TWO** advantages and **TWO** limitations of using cultural and biological methods to control pests in a protected environment by completing the table below:

8

		Cultural	Biological
Advantages	1		
	2		
Limitations	1		
	2		

Please see over .....

4. a) Describe the properties of **THREE** materials used in the manufacture of containers, for the display of plants.

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- b) State **TWO** factors to consider when choosing a container for an interior display.

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Please turn over .....

5. a) Name **ONE** plant grown as a cut flower crop in a **NAMED** protected environment.

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- b) Describe the production of the cut flower named in a), under the following headings:

- |     |                                |          |
|-----|--------------------------------|----------|
| i)  | propagation and establishment; | <b>4</b> |
| ii) | plant maintenance.             | <b>4</b> |

**Please see over .....**

6. a) Describe the environmental factors that must be considered when displaying plants inside domestic buildings.

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- b) List **FOUR** maintenance requirements for a **NAMED** fern being grown as a house plant.

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**The Royal Horticultural Society, Wisley, Woking, Surrey GU23 6QB  
RHS Registered Charity No: 222879/SC038262**





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**Tuesday 15 February 2011**

<b>Candidates Registered</b>	50	<b>Pass with Commendation</b>	4 (10.52%)
<b>Candidates Entered</b>	38	<b>Pass</b>	18 (47.36%)
<b>Absent/Withdrawn/Deferred</b>	12	<b>Fail</b>	16 (42.10%)
<b>Total Candidates Passed</b>	22 (57.89%)		

**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. This is particularly important when answering questions relating to particular (named) plant(s). Marks can only be awarded for these narratives where the example(s) are correctly and fully identified.
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. The examination should be regarded as a possible introduction to higher level studies, which will only be open to those who are in possession of a clear understanding of the horticultural terms and concepts which are current.
3. The introductory rubric given on the first page of each 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.
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. They should take care to write as legibly as possible, so that the examiner is in no doubt about what is intended.
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. It is important to ensure that responses to questions are to the point. 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 are focused 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 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 some candidates are ill prepared to answer papers of the type set. It is essential that candidates have the opportunity to practice questions. Ideally some papers should be answered in a time constrained situation.
10. Candidates should be aware of the reading list of suggested books for the RHS Level 2 Certificate in The Principles of Garden Planning, Establishment and Maintenance which is available from the Qualifications Section and can also be found on the RHS website together with past papers.

#### Examiners' Comments:

		Marks
1.	<p>a) Name and describe <b>TWO</b> protected structures which can be used when growing plants.</p> <p>The use of diagrams by some candidates to describe protected structures was helpful. Good descriptions included details of construction materials and how sections were fitted together. The range of structures described by candidates included; cloches, walk in polythene tunnels, cold frames and low polythene tunnels.</p>	6
	<p>b) Describe <b>TWO</b> horticultural uses for <b>EACH</b> structure listed in a).</p> <p>The better candidates provided descriptions for the uses of the named protected structures including using a cloche to establish row crops and for weaning off young plants.</p>	4
2.	<p>a) Name and describe the properties of <b>THREE</b> distinct cladding materials which can be used for protected structures.</p> <p>Most candidates described glass, polythene and polycarbonate as suitable cladding materials for protected structures. Properties described included longevity of material, cost, ability to transmit light, heat retention etc.</p>	6

b) Describe the effect of **EACH** of the following environmental factors on plants in a protected environment:

- i) temperature;
- ii) light.

2  
2

The majority of candidates were able to describe the effect of the environmental factors on the growing plants within the structure. Examples provided by candidates included the effect of temperature on the rate of photosynthesis and respiration within the plant and how insufficient light causes poor spindly growth in plants.

3. a) Name **TWO** pests of a **NAMED** decorative pot plant which can be grown in a protected environment.

2

The majority of candidates successfully named two pests of a named pot plant. Examples of pests named included; aphids, whitefly, mealy bug, scale insect etc.  
Plant diseases were not acceptable.

- b) State **TWO** advantages and **TWO** limitations of using cultural and biological methods to control pests in a protected environment by completing the table below:

8

		<b>Cultural</b>	<b>Biological</b>
<b>Advantages</b>	1		
	2		
<b>Limitations</b>	1		
	2		

Candidates who stated appropriate advantages and limitations gained maximum marks. Advantages included; pest cannot build up a resistance and it is more environmentally friendly whereas limitations included the fact that biological control just reduces the pest population and environmental conditions may not be conducive to biological control.

4. a) *Describe the properties of **THREE** materials used in the manufacture of containers, for the display of plants.* 6

The candidates who gained maximum marks for this section of the question provided good descriptions of the properties of the materials named which included plastic, fibreglass, ceramic etc. Properties of the materials included their durability, colour, life span, weight etc.

- b) *State **TWO** factors to consider when choosing a container for an interior display.* 4

All candidates provided appropriate answers to this section of the question. Factors included; colour and shape of the container, size, weight, maintenance required etc.

5. a) *Name **ONE** plant grown as a cut flower crop in a **NAMED** protected environment.* 2

Most candidates named a cut flower crop e.g. Chrysanthemum and a suitable protected environment e.g. multi span glasshouse and gained maximum marks.

- b) *Describe the production of the cut flower named in a), under the following headings:*

- i) *propagation and establishment;* 4  
 ii) *plant maintenance.* 4

Better answers were those that included all aspects of propagation including the method of propagation and the environmental requirements essential for successful propagation.

The best descriptions of plant maintenance included details of irrigation, nutrition, support, pest and disease avoidance and control etc. as well as the important aspects of crop husbandry.

6. a) *Describe the environmental factors that must be considered when displaying plants inside domestic buildings.* 6

Candidates who were able to describe a range of environmental factors including relative humidity, light levels, air temperature etc. gained full marks for this section of the question.

- b) *List **FOUR** maintenance requirements for a **NAMED** fern being grown as a house plant.* 4

The better candidates were able to give the full botanical name for a fern e.g. *Pteris cretica* and list four maintenance requirements. These included; relative humidity, high temperature, removal of dead or damaged fronds etc.

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May 2011