



R2114

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

Level 2

Tuesday 14 February 2012

14.30 – 15.10

Written Examination

Candidate Number:

Candidate Name:

Centre Number/Name:

IMPORTANT – Please read carefully before commencing:

- i) The duration of this paper is **40 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.
- vii) Please note, sufficient lined space is provided. It is not necessary that all lined space is used when answering a question.

ANSWER ALL QUESTIONS

MARKS

Q1 a) List **FOUR** materials used for framework construction of protected structures.

2

b) State **ONE** benefit and **ONE** limitation when using **EACH** of the materials listed in a).

8

Total Mark

Please see over/.....

Q2 a) Describe the management of *Saintpaulia ionantha* (African violet), using **EACH** of the following headings:

- | | | |
|-----|-------------------------|----------|
| i) | Potting and re-potting; | 3 |
| ii) | Feeding and watering. | 3 |

- b) **NAME ONE** pest and **ONE** disease of *Saintpaulia ionantha*. **2**

- c) State **ONE** control measure for **EACH** pest and disease named in b). **2**

Total Mark

Q3 a) Name **FOUR** types of protected structures used for crop production.

2

b) Describe **ONE** method by which a grower can change the relative humidity within **EACH** of the structures named in a).

8

Total Mark

Please see over/.....

Q4 a) Name **ONE** bulb for forcing under protection.

1

.....

b) Describe the production of the named bulb using **EACH** of the following headings:

- i) establishment to the point of shoot growth;
- ii) maintenance to stimulate flowering;
- iii) **ONE** disorder and its control.

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Total Mark

Please turn over/.....

Q6 a) **NAME TWO** distinct materials used in the manufacture of plant containers suitable for interior display.

2

Container material 1

Container material 2

b) Compare how the materials named in a), affect management considerations and the visual appeal of interior displays, by completing the table below.

	Container material 1	Container material 2
Management considerations		
Visual appeal		

4

4

Total Mark

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**The Royal Horticultural Society, Wisley, Woking, Surrey GU23 6QB.
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AND THEIR USE IN PLANT CULTIVATION**

Level 2

Tuesday 14 February 2012

Candidates Registered	317	Pass with Commendation	117 (49.79%)
Candidates Entered	235	Pass	102 (43.40%)
Absent/Withdrawn/Deferred	82	Fail	16 (6.81%)
Total Candidates Passed	219 (93.19%)		

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
Q1	a) List FOUR materials used for framework construction of protected structures.	2
	b) State ONE benefit and ONE limitation when using EACH of the materials listed in a).	8
	a) The majority of candidates were able to accurately identify materials for framework construction of protected structures e.g. aluminium, galvanised steel, plastic and wood (soft wood). A few candidates confused construction materials with cladding which could not be awarded marks.	
	b) The best candidates provided a range of benefits and limitations for the construction materials and included; light weight as a benefit and not very strong as a limitation of aluminium. Candidates who stated that some materials are cheap could not be awarded marks as some materials are just less expensive than others.	
Q2	a) Describe the management of <i>Saintpaulia ionantha</i> (African violet), using EACH of the following headings:	
	i) Potting and re-potting;	3
	ii) Feeding and watering.	3

- b) **NAME ONE** pest and **ONE** disease of *Saintpaulia ionantha*. 2
- c) State **ONE** control measure for **EACH** pest and disease named in b). 2
- a)i) Candidates who gave detailed descriptions of potting and re-potting included; the timing of potting, stages of growth when potting is carried out, type of potting compost, depth of potting and firmness and the need for a suitable sized pot.
- a)ii) The best candidates gave details of the type of nutrient feed required in the growing media, how additional nutrients can be provided through the irrigation system and how each of the main nutrients will benefit the plant.
- Most candidates understood the significance of hirsute foliage and the need to water from below as well as the importance of having a reasonably high moisture content in the root environment.
- b) A range of pest and diseases were named by candidates and included; sciarid fly, red spider mite and aphids as pests and botrytis, powdery mildew and virus as diseases which affect plants of *Saintpaulia ionantha*
- c) The majority of candidates stated that good cleanliness and hygiene or contact or systemic insecticides were appropriate control measures for pests and correct spacing, optimum ventilation, hygiene and grading to maintain a high standard of plant material are important control measures for diseases.
- Q3** a) Name **FOUR** types of protected structures used for crop production. 2
- b) Describe **ONE** method by which a grower can change the relative humidity within **EACH** of the structures named in a). 8
- a) A wide range of protected structures were named by the majority of candidates e.g. glasshouse, polythene tunnel, cold frame and cloche and were awarded full marks.
- b) Candidates gave a range of methods a grower can use to raise and lower the relative humidity including; damping down, raising or lowering the air temperature, improving the ventilation and selecting a suitable irrigation system and gained full marks.
- Candidates were expected to refer to the effect of the proposed actions within the environment.

- Q4** a) Name **ONE** bulb for forcing under protection. 1
- b) Describe the production of the named bulb using **EACH** of the following headings:
- i) establishment to the point of shoot growth; 5
 - ii) maintenance to stimulate flowering; 2
 - iii) **ONE** disorder and its control. 2
- a) Most candidates correctly named *Hyacinthus*, *Narcissus*, *Tulipa* and *Crocus* as suitable bulbs for forcing.
- b) Candidates were required to describe the need for a cold period prior to flowering and to describe bulb treatments to allow bud formation through an extended cold period and how it can be achieved.
- Most candidates described a gradual warming up and exposure to optimum light as a means to stimulate flowering in bulbs and the importance of managing the growing environment to prevent damage to the plants from disorders. Etiolated, weak and spindly growth and poor flowering can be corrected by improving light levels and correct positioning of the bulbs.
- Q5** a) For a **NAMED** salad crop, identify **ONE** suitable protected structure in which it can be grown. 2
- b) Describe **TWO** benefits and **TWO** limitations of growing the salad crop named in a), in a protected structure. 8
- a) The majority of candidates named a suitable salad crop e.g. tomatoes which can be grown in a greenhouse, walk in tunnel or a multispan tunnel. To gain full marks the structure had to be suitable for the crop specified.
- b) Candidates who related the benefits and limitations of growing the salad crop to the specific structure for that crop were awarded maximum marks. Suitable benefits were the use of biological control to control pests and diseases and extending the growing season as the crop will mature more quickly under protection. Limitations were the increased growing costs and the increased risk from the spread of pests and diseases.
- Q6** a) **NAME TWO** distinct materials used in the manufacture of plant containers suitable for interior display. 2
- Container material 1
- Container material 2
- b) Compare how the materials named in a), affect management considerations and the visual appeal of interior displays, by completing the table below.

	<i>Container material 1</i>	<i>Container material 2</i>
<i>Management considerations</i>		
<i>Visual appeal</i>		

4

4

- a) Most candidates gained full marks by naming two materials e.g. plastic, wood, terracotta or ceramic.
- b) The majority of candidates were able to make suitable comparisons of specific materials and gained full marks e.g. management considerations for plastic included; easily cleaned, low maintenance, light weight and water retentive while answers provided for visual appeal of plastic included; although there are a wide range of colours and shapes available they can look unattractive.

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