



Sharing the best in Gardening

R2114
UNDERSTANDING PROTECTED ENVIRONMENTS
AND THEIR USE IN PLANT CULTIVATION

Level 2

Tuesday 26 June 2012

14:30 – 15:10

Written Examination

Candidate Name:

Candidate Number:

Centre Name/Number:

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 in answering the questions.

Ofqual Unit Code L/601/0267

Please turn over/.....

ANSWER ALL QUESTIONS

MARKS

Q1 a) Describe how the selection of framework material in a protected structure will affect light transmission.

2

b) Name and describe **FOUR** effects of insufficient light on a tomato crop.

8

Total Mark

Please see over/.....

Q4 a) Describe the production of *Cyclamen persicum* under the following headings:

- i) propagation;
- ii) establishment of the young plant;
- iii) maintenance.

8

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

b) Name **ONE** pest and **ONE** disease for *Cyclamen persicum*.

2

.....

.....

.....

.....

.....

Total Mark

Please turn over/.....

Q5

Complete the table below to show:

- a) characteristics of the environment for each room;
- b) how these characteristics affect the plant care needed.

Environment	Environmental factors	Subsequent plant care	
Conservatory			2
Lounge			2
Kitchen/ bathroom			2
Hall			2
Unheated bedroom			2
			<div>Total Mark</div>

Please see over/.....

- plant propagation;
- crop production;
- decorative display;
- over-wintering;
- forcing.

2
2
2
2
2

Total Mark

7

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**The Royal Horticultural Society, Wisley, Woking, Surrey GU23 6QB.
Charity Registration Number: 222879/SC038262**

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Level 2

Tuesday 26 June 2012

Candidates Registered	1084	Pass with Commendation	272 (31%)
Candidates Entered	889	Pass	430 (48%)
Absent/Withdrawn/Deferred	195	Fail	187 (21%)
Total Candidates Passed	702 (79%)		

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) <i>Describe how the selection of framework material in a protected structure will affect light transmission.</i>	2
	b) <i>Name and describe FOUR effects of insufficient light on a tomato crop.</i>	8
	a) The majority of candidates were able to determine the importance of framework material and its effect on light transmission and gained full marks. Aluminium is a strong lightweight material which is easily extruded into glazing bars and has a narrow profile allowing maximum light entry. Some candidates included the reflective properties of the glazing material as well as its strength.	
	b) Candidates who were able to name four effects and describe them were awarded maximum marks. Insufficient light results in poor growth that tends to be etiolated which is weak and spindly. Other acceptable effects were poor fruit set, susceptibility to pest and disease and poor ripening of the fruits.	
Q2	a) <i>Describe TWO distinct methods of ventilating protected structures.</i>	4
	b) <i>Describe THREE ways in which air temperature can be lowered within the growing environment.</i>	6

- a) The best candidates described natural and forced draught or fan ventilation. They described the position of the ventilators in the ridge and or at the sides of the structure and how the ridge and side ventilators allow warm air to escape whilst replacing it with cooler air at lower relative humidity. Forced draught or fan ventilation was also described as a method that relies on fans that extract the air from the structure.
- b) Most candidates described suitable ways in which air temperature can be lowered in a growing environment and were awarded full marks. Suitable methods included; ventilation, the use of shading materials and damping down the paths in structures.

Q3 a) *Describe the influence of materials used in the manufacture of plant containers on irrigation management.* **4**

- b) *Describe **EACH** of the following irrigation systems:*
 - i) *drip;*
 - ii) *capillary.***6**

- a) Candidates who described the materials used for plant containers and related this directly to irrigation management gained maximum marks. Suitable examples given included; watertight materials will not require a plastic liner, darker materials will absorb heat, raise the temperature of the growing media and increase moisture loss and materials that are not watertight will require a lining to prevent spillage.
- b) Those candidates who used diagrams to illustrate their answers combined with a brief description of how the irrigation systems worked were able to gain full marks. Suitable answers included details of drip irrigation where water is delivered through an alkathene pipe which is suspended just above the pot. The water is at low pressure and drips into the pot at the base of the stem.

Candidates described capillary irrigation as a method where plants are stood on a bench which is flooded with water for a limited period of time or covered with capillary matting and lengths of seep hose. The plants take up water by capillary action as required.

Some candidates included details of the difficulties that can occur with this type of irrigation system e.g. rooting through of plants and pest and disease problems.

Q4 a) *Describe the production of *Cyclamen persicum* under the following headings:*

- i) *propagation;*
- ii) *establishment of the young plant;*
- iii) *maintenance.*

8

b) Name **ONE** pest and **ONE** disease for *Cyclamen persicum*.

2

a) The best answers were from candidates who provided detail in their response to the question and were awarded full marks.

i) Details of propagation included; use of fresh seed, seed treatment carried out, temperature for germination to take place, sowing medium, time of sowing. Mature corms were also accepted as a method of propagating *Cyclamen persicum*.

ii) Establishment of the young plant includes the need for potting, when it is carried out, type of pot and growing media used, handling of the young plant and depth and firmness of potting.

iii) A range of acceptable maintenance tasks were provided by candidates and included; watering, feeding and pest and disease control.

b) The majority of candidates were able to name one pest e.g. vine weevil one disease e.g. fusarium for *Cyclamen persicum*.

Some candidates gave physiological disorders and pests which were not appropriate to container grown plants and could not be awarded any marks.

Q5 Complete the table below to show:

- a) characteristics of the environment for each room;
b) how these characteristics affect the plant care needed.

Environment	Environmental factors	Subsequent plant care
Conservatory		
Lounge		
Kitchen/ bathroom		
Hall		
Unheated bedroom		

2

2

2

2

2

- a) To gain full marks for this question it was important for candidates to qualify the environmental factors given in their answers. Acceptable examples included; high relative humidity with fluctuating temperatures in a kitchen and bathroom and poor natural light and fluctuations in air temperature due to draughts in a hall.
- b) Most candidates who had provided good examples of environmental factors in part a) of the question linked it well to subsequent plant care e.g. regular watering and shading are required in a conservatory depending on its orientation.

Q6 Describe the suitability of **ONE** distinct **NAMED** protective structure for each of the following horticultural uses:

- | | | |
|----|---------------------|---|
| a) | plant propagation; | 2 |
| b) | crop production; | 2 |
| c) | decorative display; | 2 |
| d) | over-wintering; | 2 |
| e) | forcing. | 2 |

The majority of candidates provided good descriptions of suitable structures for each of the horticultural uses given and were awarded full marks. Acceptable examples included; aluminium glasshouse for propagation, polythene tunnel for crop production, mansard or lean to glasshouse for decorative display, cold frame for over wintering and a cloche for forcing.

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