



Sharing the best in Gardening

**R3104**

**UNDERSTANDING APPLIED PLANT PROPAGATION**

**Level 3**

**Wednesday 27 June 2012**

**15:30 – 16:15**

**Written Examination**

Candidate Number:.....

Candidate Name:.....

Centre Number/Name:.....

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

- i) The duration of this paper is **45** 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 A/601/1043

**Please turn over/.....**

## ANSWER ALL QUESTIONS

## MARKS

**Q1** a) State, using a **NAMED** plant example in **EACH** case, **TWO** distinct forms of layering.

4

[illegible]

b) Describe the propagation of **ONE** of the plants named in a) up to the point at which the rooted layer is removed from the mother plant.

6

[illegible]

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

## MARKS

Total Mark

**Please turn over/.....**

**Q2** a) Explain the importance of photosynthesis in the successful rooting of a **NAMED** plant.

**5**

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

3

**Q3** a) Explain the effect of light on the germination of seeds.

6

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

4

Total Mark
------------

7

**Q4** a) Identify, using a **NAMED** example in **EACH** case:

- i) environmental;
- ii) anatomical;
- iii) physiological;

1  
1  
1

influences that inhibit seed germination.

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



7

9

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



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## **UNDERSTANDING APPLIED PLANT PROPAGATION**

**Level 3**

**Wednesday 27 June 2012**

<b>Candidates Registered</b>	<b>112</b>		<b>Total Candidates Passed</b>	<b>77</b>	<b>80.21%</b>
Candidates Entered	96	85.71%	Passed with Commendation	43	44.79%
Candidates Absent	14	12.5%	Passed	34	35.42%
Candidates Deferred	1	0.89%	Failed	19	19.79%
Candidates Withdrawn	1	0.89%			

- Q1**
- a) State, using a **NAMED** plant example in **EACH** case, **TWO** distinct forms of layering.
  - b) Describe the propagation of **ONE** of the plants named in a) up to the point at which the rooted layer is removed from the mother plant.

Most candidates were able to provide two examples of layering, though, on occasions, there was some confusion between the different types of layering, most noticeable when differentiation between tip, serpentine, French and simple layering. The candidate who was able to match up each layering technique to an appropriately selected named plant example scored well. Maximum marks are awarded for plant examples given in full botanical latin.

In part b) it is important to follow on from part a) by describing the propagation of a selected plant. Maximum marks were again awarded to the candidate who was able to describe a layering technique that was appropriate to the named plant. In this section marks were awarded for timing, health status of layer, preparation both in respect of the layer and the ground conditions, and the environment in which the layer was placed into and how it was secured.

- Q2**
- a) Explain the importance of photosynthesis in the successful rooting of a **NAMED** plant.
  - b) Describe how a propagator maximises the ability of a cutting to photosynthesise while continuing to provide appropriate levels of humidity.

To score well in this question candidates needed to first select an appropriate plant example, to allow them the opportunity to explain the relationship between photosynthesis and successful rooting. A number of candidates went down the route of expressing their answer in relation to rooting a leafless hardwood cutting which while possible to answer in this way made it more difficult to score well. The best answers related to describing the relationship between a leafy softwood cutting and the process of photosynthesis, identifying the limited stored food reserves contained within a softwood cutting and the need for a cutting to create additional energy via photosynthesis in order to speed up and aid the rooting process.

Part b) was answered in one of two ways, both of which had the potential to gain maximum marks. Some answers related the question to the skill of the individual (a propagator) and what they could do to maximise the ability of a cutting to photosynthesise while others considered a propagator to be a piece of equipment. In both cases the candidate who was able to describe how the control of the environment relating to light, temperature, carbon dioxide levels and moisture content all scored well. In neither section is the candidate required to describe in great detail the process of photosynthesis and those candidates who did often scored less well as they failed to relate their answer to the question.

- Q3**
- a) Explain the effect of light on the germination of seeds.
  - b) Describe the sowing of light sensitive seed for **ONE NAMED** plant example.

Marks in the first part of the question were available to the candidate who identified that seed falls into three categories, those requiring light or darkness to germinate, and those that germinate in either condition.

Further marks were available to the candidate who could explain the effect of far red and red light on the germination of some seeds and also what effect light can have on the levels of gibberellic acid within the seed. No marks were available to the candidate who went on to describe the role of light in respect of photosynthesis as this related to a post-germination phase.

The candidate who first selected an appropriate named seed example and who then went on to describe the seed sowing process relevant to the named seed example scored well in the second section. As with all answers it is important to read the question carefully, in this example the candidate must first pick a light or dark sensitive seed and then describe the appropriate technique to fit the example.

This question does not require the candidate to explain the germination process and those candidates who did received no additional marks.

**Q4**

a) Identify, using a **NAMED** example in **EACH** case:

- i) environmental;
- ii) anatomical;
- iii) physiological;

influences that inhibit seed germination.

b) Describe a sequence of techniques for germinating the seeds of a plant with **ALL** of the inhibitors identified in a).

To obtain maximum marks in part a), the candidate is required to provide plant examples, using full botanic names, which exhibit seed germination inhibition relating to each of the above.

Part b) required a good understanding of the reasons for seed treatments, for example stratification and scarification. Those candidates who demonstrated good knowledge of these scored well.

The answer provided by the candidate in b) was dependent on ensuring that suitable germination techniques to overcome an environmental, an anatomical and a physiological factor, were fully described. Marks were not awarded to candidates who described germination techniques in general, which did not relate directly to each of the factors listed in a).

Candidates who scored well explained, for example, the requirement for an optimum germination temperature, removal of a hard seed coat and chemical inhibitors followed by a detailed description of how these could be provided to ensure successful seed germination.

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