



Sharing the best in Gardening

R2104
UNDERSTANDING PLANT PROPAGATION

Level 2

Monday 25 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 M/601/0343

Please turn over/.....

ANSWER ALL QUESTIONS

MARKS

Q1 a) Name **TWO** plants, from different genera, that can be propagated by seed.

2

b) Name **TWO** plants, from different genera, that **cannot** be propagated by seed.

2

c) Describe characteristics of plants that can be propagated by seed.

6

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.

Total Mark

Please see over/.....

Q2 a) Describe the preparation of a seedbed on an outdoor site.

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b) Describe the process of thinning out and transplanting seedlings to a new site.

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Total Mark

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- Q3** a) Describe the propagation of **ONE NAMED** plant by leaf squares, with the use of a fully labelled diagram.

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- b) State the aftercare of the leaf square cuttings up to rooting.

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Total Mark

Please see over/.....

Q4 a) Describe the propagation of **ONE NAMED** plant by root cuttings.

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b) State the aftercare of the cuttings named in a).

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Total Mark

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Q5 a) State **TWO NAMED** conifers, from different genera, that are propagated by cuttings.

2

b) Describe the propagation of conifers by evergreen cuttings under the following headings:

- i) collection;
- ii) preparation.

4

4

Total Mark

Please see over/.....

4

[illegible]

6

[illegible]

7

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



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R2104 UNDERSTANDING PLANT PROPAGATION

Level 2

Monday 25 June 2012

Candidates Registered	583	Pass with Commendation	64 (14%)
Candidates Entered	467	Pass	213 (45%)
Absent/Withdrawn/Deferred	116	Fail	190 (41%)
Total Candidates Passed	277 (59%)		

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 Plant Growth, Propagation and Development 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) Name TWO plants, from different genera, that can be propagated by seed.	2
	b) Name TWO plants, from different genera, that cannot be propagated by seed.	2
	c) Describe characteristics of plants that can be propagated by seed.	6
a)	The majority of candidates were able to provide full botanical names for plants that are propagated by seed e.g. <i>Sorbus aucuparia</i> and <i>Lobelia erinus</i> and were awarded full marks.	
b)	The best candidates provided the full botanical name for appropriate cultivars e.g. <i>Fagus sylvatica</i> 'Zlatia', named male dioecious plants e.g. <i>Salix caprea</i> or <i>Ilex aquifolium</i> or plants whose fruits are infertile e.g. seedless grapes and <i>Aesculus x carnea</i> .	
c)	Candidates who provided good descriptions gained full marks for this section of the question. Suitable responses included; plants usually produce attractive flowers with scent and nectaries to attract pollinators and disseminate seed, plants are either monoecious or dioecious so that pollination, followed by fertilisation can take place and plants must be capable and sexually mature to produce seed.	

- Q2** a) *Describe the preparation of a seedbed on an outdoor site.* **5**
- b) *Describe the process of thinning out and transplanting seedlings to a new site.* **5**
- a) Most candidates were able to describe the preparation of an outdoor seedbed and included the following for full marks; Timing when preparation is carried out and weather conditions, removal of weeds, stones etc. method of cultivation, consolidation, application of fertiliser, checking soil pH and producing a fine tilth for sowing.
- A number of candidates included the process of seed sowing which was not required and could not be awarded any marks.
- b) The best candidates described the process of thinning out as the careful removal of plants within a row leaving the best plants in place at the correct spacing and transplanting as the planting of transplants to a new outdoor site against a line at the correct spacing to gain full marks.
- Q3** a) *Describe the propagation of **ONE NAMED** plant by leaf squares, with the use of a fully labelled diagram.* **8**
- b) *State the aftercare of the leaf square cuttings up to rooting.* **2**
- a) The majority of candidates correctly described the propagation of *Begonia rex* with the use of well labelled sketches. To gain full marks the candidates included the following in their descriptions; selection of healthy, pest and disease free propagation material removed correctly from the stock plant, method of propagation with position of veins on correct sized propagules, type of compost used and the method of insertion or pinning down of the cuttings.
- It is not necessary to apply hormone rooting powder or liquids to the cuttings as they can slow down or stop rooting for this propagation method.
- b) Most candidates were able to state the aftercare required by the cuttings and were awarded full marks. Suitable answers included; the type of propagation facility required e.g. a mist bench, a suitable base temperature e.g. 21°C, checking for the presence of pest and diseases and removing diseased cuttings as necessary and watering as required to ensure that the cuttings do not dry out.
- Q4** a) *Describe the propagation of **ONE NAMED** plant by root cuttings.* **6**
- b) *State the aftercare of the cuttings named in a).* **4**

- a) The majority of candidates were able to describe the propagation of a named plant by root cuttings e.g. *Acanthus mollis* and were awarded full marks. Candidates could either describe the propagation method for either thick or thin roots although some described both which was not necessary. The best answers included the following; method of extracting cutting material from the stock plant, type of cutting material used, timing of the operation, method of propagation including length of cutting and types of cuts made, type of compost used, method of insertion and covering.

The use of hormone rooting powder or liquids is not required as the cuttings are roots.

- b) The best candidates stated that propagules in containers should be placed in a cool glasshouse or cold frame, propagules should not be allowed to dry out but also not over watered and that checks should be made for damage caused by pests and diseases and removed as necessary.

Many candidates described the potting off and growing on of the cuttings which was not required and could not be awarded any marks.

Q5 a) State **TWO NAMED** conifers, from different genera, that are propagated by cuttings. **2**

- b) Describe the propagation of conifers by evergreen cuttings under the following headings:

- i) collection;
ii) preparation. **4**

- a) The majority of candidates were able to provide full botanical names for two conifers that are propagated from cuttings e.g. *xCuprocyparis leylandii* and *Thuja occidentalis* 'Rheingold'.

Candidates who named conifers that are normally propagated by grafting could not be awarded any marks.

- b) Candidates who accurately described the collection and preparation of conifers by evergreen cuttings gained full marks.
- i) Collection included; timing of collection, either late July to end of September or February to April, propagation material to be healthy, true to type and pest and disease free, selection of material i.e. lateral shoots from the middle of the plant should include a portion of current seasons semi-ripe wood all physiologically of the same age.

- ii) Preparation included; correct length of cutting, including a portion of ripe wood on the base of the cutting, position of cut at the base of the cutting, wounding and treating the base of the propagule with a medium strength hormone rooting powder or liquid.

- Q6** a) *State the effect storage has on the viability and germination potential of seed.* **4**
- b) *Describe the effect of environmental conditions on the germination and early growth of seedlings.* **6**
- a) Candidates who ensured that their answers referred to the effect that storage has on the viability and germination potential of seed were awarded full marks. Effects included; high temperatures which speed up the rate of respiration, increased levels of carbon dioxide slow down the rate of respiration in seeds, the total lack of oxygen in storage kills most seeds, seeds lose viability if the environment is too dry or too moist (depending on the type of seed) and many types of seed have an after ripening requirement when in storage which promotes germination.
- b) Candidates provided a range of suitable answers which included; lack of oxygen inhibits germination, high levels of carbon dioxide inhibits germination, seeds require moisture but will die if the compost is water-logged or too dry, soil temperature can effect germination as some seeds are either inhibited or promoted to germinate by given temperatures, most seeds have a light requirement but some will only germinate in darkness and seedlings require an appropriate light intensity once they have germinated to enable photosynthesis to take place.

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