



R2104

UNDERSTANDING PLANT PROPAGATION

Level 2

Monday 27 June 2011

11.00 - 11.40

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.

Answer all questions

Marks

1. a) Name **ONE** plant example of a seed requiring cool moist storage.

1

- b) Describe **THREE** appropriate storage conditions required to ensure continued viability for the seed named in a).

9

b) Describe **THREE** appropriate storage conditions required to ensure continued viability for the seed named in a).

Total Mark

Please see over.....

3. a) Describe the preparation of land for sowing seeds in open ground.

6

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- b) Describe **TWO** methods of sowing seed in open ground.

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Total Mark

Please see over

4. a) Name **TWO** plants that can be propagated by hardwood cuttings. 2

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- b) Describe the collection of deciduous hardwood cuttings. 3

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- c) Describe the preparation of deciduous hardwood cuttings. 5

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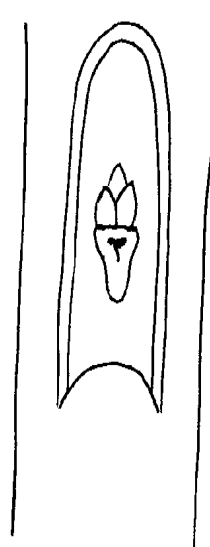
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Total Mark

Please turn over.....

5. a) Name the grafting or budding method shown in **EACH** of the drawings below:

2



- b) Name **ONE** plant which can be propagated by **EACH** of the methods named in a).

2

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- c) Describe the aftercare of outdoor grafted and budded plants.

6

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Total Mark

Please see over

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



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Level 2

Monday 27 June 2011

Candidates Registered	842	Pass with Commendation	59 (8.65%)
Candidates Entered	682 (81%)	Pass	360 (52.79%)
Absent/Withdrawn/Deferred	160 (19%)	Fail	263 (38.56%)
Total Candidates Passed	419 (61.44%)		

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.

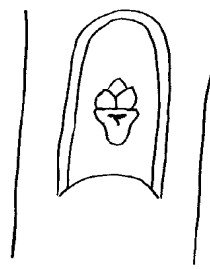
Examiners' Comments:

		Marks
1.	a) Name ONE plant example of a seed requiring cool moist storage.	1
	b) Describe THREE appropriate storage conditions required to ensure continued viability for the seed named in a).	9
	a) The majority of candidates provided a suitably named plant e.g. <i>Fraxinus excelsior</i> , <i>Sorbus aucuparia</i> etc. that requires cool moist storage. Full botanical names were required for full marks.	
	b) Those candidates who outlined three distinct storage conditions gained full marks. These were refrigerating the seed between 0 - 5°C in moist sand (or other suitable substrate) in containers or polythene bags, placing seed in containers in a stratification pit and protecting them from pests until ready for sowing in the spring or storing the seed in cool conditions with low oxygen and high carbon dioxide.	
2.	a) State TWO benefits of propagating plants from seed.	2
	b) Describe FOUR changes that occur within a germinating seed.	8
	a) Most candidates were able to state two benefits of propagating plants from seed. Answers included benefits such as; seedling variation, large numbers of plants propagated quickly, non clonal material and therefore less chance of spread of disease, relatively cheap method of propagation etc.	

- b) The majority of candidates accurately described four changes that occur in a germinating seed. These included water uptake and swelling of the embryo, increased metabolism and splitting of the testa, development of the hypocotyl, emergence of the radicle followed by the emergence of the plumule. Lack of detail in descriptions resulted in a reduction of marks for some candidates.
3. a) *Describe the preparation of land for sowing seeds in open ground.* **6**
- b) *Describe **TWO** methods of sowing seed in open ground.* **4**
- a) A number of candidates did not state the time of year when the land should be prepared or the need to assess the soils' characteristics (pH etc.) Those candidates who described the preparation including digging, forking level, raking level and the removal of surface debris, consolidation, fertiliser application and final raking gained full marks.
- Detailed descriptions of single and double digging were not required.
- b) The majority of candidates described two suitable methods of sowing seed e.g. broadcast, space or station sowing in drills or fluid drilling. To gain full marks candidates needed to include detail on the depth and density of sowing, covering etc.
4. a) *Name **TWO** plants that can be propagated by hardwood cuttings.* **2**
- b) *Describe the collection of deciduous hardwood cuttings.* **3**
- c) *Describe the preparation of deciduous hardwood cuttings.* **5**
- a) Candidates named a suitable range of plants that can be propagated by hardwood cuttings including *Ribes sanguineum*, *Populus alba*, *Salix alba* etc. Full botanical names were required for full marks.
- b) The best answers included time of year that the material should be collected, collection from clean healthy stock, of the correct ripeness and thickness, removal of the material from above a bud without leaving a snag and labelling the plant material.
- Some candidates did not read the question properly and answered part b) and c) of the question together or repeated information which meant that additional marks could not be awarded.
- c) Candidates were expected to describe the length of the cutting i.e. 15-30cm prepared with a flat cut below a bud at the base and a sloping cut above a bud at the top. Many candidates also correctly described wounding and treating cuttings with hormone rooting powder. Some candidates provided a clearly labelled diagram which was useful.
- Description of the insertion of the cuttings was not required.

5. a) Name the grafting or budding method shown in **EACH** of the drawings below:

2



- b) Name **ONE** plant which can be propagated by **EACH** of the methods named in a).

2

- c) Describe the aftercare of outdoor grafted and budded plants.

6

- a) Most candidates correctly identified the whip and tongue graft but many confused the chip bud (correct answer) with 'T' budding.
- b) To gain full marks candidates were expected to name cultivated plants e.g. *Salix caprea* 'Pendula' and *Malus* 'Discovery'. Names of the rootstock were not acceptable.
- c) Candidates who described operations such as watering in dry weather, weed control, pest and disease control, checking and removal of grafting tape, removal of suckers, heading back in spring etc. gained maximum marks.

6. a) Name **THREE** plants that can be propagated by soft tip cuttings.

3

- b) Describe the aftercare of soft tip cuttings placed in a mist propagation unit up to the point at which they can be potted off.

7

- a) Most candidates were able to name three plants that are propagated by softwood cuttings e.g. *Acer palmatum* 'Bloodgood', *Helichrysum petiolatum*, *Fuchsia fulgens* etc. Full plant names were required for full marks.
- b) The best candidates gained full marks where they described the use of a fungicidal drench, checking for pest and diseases, the need to have sufficient moisture on and around the foliage, the removal of fallen, dead and dying leaves, shading and ventilation, weaning the cuttings and checking for rooting.

Some candidates misread the question and described the preparation and insertion of soft tip cuttings which could not be rewarded.

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November 2011