



**R3104**

**UNDERSTANDING APPLIED PLANT PROPAGATION**

**Level 3**

**Wednesday 29 June 2011**

**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

Describe the properties of **FIVE** materials suitable for use in rooting media.

10

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

3

**5**

- Q2** a) List, in the order in which they occur, the main physiological changes in a germinating seed.

b) Explain how **NAMED** plant hormones influence seed germination.

**5**

Total Mark

### Q3

Describe, for a **NAMED** plant in **EACH** case, propagation by:

- i) division;
- ii) stem cuttings;
- iii) grafting.

2  
4  
4

Total Mark

**Q4** a) Explain the importance of:

- i) cambium;
- ii) node;

33

for **TWO NAMED** propagation techniques in **EACH** case.

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



- b) Explain how transpiration can be controlled to maximise the success of these techniques.

4



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## RHS LEVEL 3 CERTIFICATE IN THE PRINCIPLES OF PLANT GROWTH, HEALTH AND APPLIED PROPAGATION WRITTEN EXAMINATION

15:30pm Wednesday 29 June 2011

R3104

### UNDERSTANDING APPLIED PLANT PROPAGATION

<b>Candidates Registered</b>	<b>68</b>		<b>Total Candidates Passed</b>	<b>50</b>	<b>98.04%</b>
Candidates Entered	51	75.0%	Passed with Commendation	34	66.67%
Candidates Absent	12	17.65%	Passed	16	31.37%
Candidates Deferred	4	5.88%	Failed	1	1.97%
Candidates Withdrawn	1	1.47%			

**Q1** Describe the properties of **FIVE** materials suitable for use in rooting media.

Most candidates were able to provide five materials while the better candidates suggested more mainstream materials such as coir, perlite, bark, vermiculite and peat. Those candidates who then went on to gain maximum marks were able to identify key properties which made them suitable for use in rooting media. These qualities included their water holding capacity, high levels of air filled porosity, ability to create good levels of drainage within the media, low levels of nutrient and free-flowing.

- Q2**
- a) List, in the order in which they occur, the main physiological changes in a germinating seed.
  - b) Explain how **NAMED** plant hormones influence seed germination.

The first part of the question was less well answered than Q1 but those candidates who gained high marks provided 5 recognisable steps within seed germination listed in the order in which they happen. Some candidates were able to provide a number of steps but failed to secure maximum marks as a result of mixing up the order in which they occur. For example not all candidates identified that the radicle emerges from the seed prior to the plumule. Those candidates who mentioned the following plant hormones; gibberellins, abscisic acid, ethylene and cytokinins, all scored well, while candidates who were able to add a level of explanation to each plant hormone gained maximum marks. There was a degree of confusion around the influence of abscisic acid and the role of gibberellins, whereby some candidates mixed them up.

**Q3** Describe, for a **NAMED** plant in **EACH** case, propagation by:

- i) division;
- ii) stem cuttings;
- iii) grafting.

This question was generally well answered with the better candidates providing suitable plant examples for each propagation technique. For maximum marks plant examples needed to be written in full botanical Latin as stated in the rubric of the examination paper. Most candidates understood the propagation techniques both for division and stem cuttings. Good answers for division included time of year, requirement to renew stock and the physical process of dividing the plant material. Those candidates who described the type of material selected for making stem cuttings and a specific rooting media plus propagation environment scored well.

While most candidates were able to answer the grafting section of this question, it was the one area that proved more demanding and a lack of practical understanding was evident in a number of answers. This section lends itself to the candidate providing a clear diagram highlighting both the rootstock and scion material and the type of graft suited to the chosen named plant example. The diagram may also indicate the height at which the graft union is made.

**Q4** a) Explain the importance of:

- i) cambium;
- ii) node;

for **TWO NAMED** propagation techniques in **EACH** case.

b) Explain how transpiration can be controlled to maximise the success of these techniques.

This question was generally well answered with those candidates taking time to both read and understand the question gaining good scores. Crucial to doing well was to provide two relevant propagation techniques that related to a) which could then logically feed through to b) explaining how to control transpiration. If the only examples a candidate has selected in a) are leafless hardwood cuttings and winter bench grafting, it is more challenging than if the examples selected included summer grafting of *Acer palmatum* and a softwood cutting of *Hydrangea macrophylla*.

Good marks were obtained by candidates who mentioned the importance of matching cambiums when grafting and the increased levels of rooting hormone found around a node and the relevance of cutting below a node to take advantage of this.

To gain maximum marks in b) good candidates referred to the need to reduce light levels through external shading and internal screens, and the role polythene, fog and mist play in controlling transpiration rates.

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