



RHS LEVEL 3 DIPLOMA IN HORTICULTURE JULY 2010

PRACTICAL EXAMINATION – MODULE H

PAPER 1

IMPORTANT: Please read carefully before commencing.

- i) Duration of this paper is **3 hours**.
- ii) **ALL** questions are to be attempted.
- iii) **ALL** work to be labelled with the candidate's number.
- iv) Use **METRIC** measurements **ONLY**.

Please turn over/.....

ANSWER ALL QUESTIONS

MARKS

Q1 Prepare and insert **THREE** cuttings at appropriate spacing, for **EACH** of the methods listed, using the plant material provided. Select an appropriate container and a suitable rooting medium for each:

- | | | |
|------|--------------------|---|
| i) | hardwood cutting; | 4 |
| ii) | semi-ripe cutting; | 4 |
| iii) | leaf bud cutting; | 4 |
| iv) | root cutting. | 4 |

Proficiency mark	4
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Q2 Using the scion wood provided, chip bud, one bud on to **EACH** of the **TWO** rootstocks labelled **A**. **20**

Proficiency mark	10
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Q3 In discussion with the examiner, evaluate the planting and condition of the **THREE** trees and **TWO** shrubs indicated. **24**

Q4 Prune **EACH** of the plant specimens labelled **B**, **C** and **D** in order to complete the annual plant maintenance. Assume that it is the appropriate time of year for this work to be carried out.

The examiner will ask you for the recommended time of the year pruning should be completed for each shrub.	15
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Leave all the prunings on the work bench.

Proficiency mark	3
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Please see over/.....

ANSWER ALL QUESTIONS

	MARKS
Q5 Using the pro-forma provided, review the ornamental shrub border indicated and answer EACH of the following: <ul style="list-style-type: none"> i) Identify and record EIGHT plants (not weeds) in the border. ii) Identify and record FOUR visual examples of plant damage caused by a NAMED pest OR disease. iii) Recommend FOUR plants, which could be added to this border to provide interest for the visitor in December. iv) State FOUR methods of reducing the maintenance time spent on this border. 	30
Q6 Using the pro-forma provided, review the TEN seed trays that have been sown with fine or medium seed. Evaluate the seed tray preparation and the standard of seed sowing.	20
Q7 Using the pro-forma provided: <ul style="list-style-type: none"> i) Identify, using generic and specific names, the lawn grass within EACH of the circles marked E, F and G. ii) Identify, using generic and specific names, the lawn weeds marked H, I and J. iii) State an acceptable method of cultural control for EACH of the weeds identified in ii). 	6 6 6
Q8 The area indicated is to be sprayed with a translocated herbicide using a knapsack sprayer. Using the pro-forma provided, identify any visible hazards associated with this task.	20
	180

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RHS LEVEL 3 DIPLOMA IN HORTICULTURE JULY 2010

PRACTICAL EXAMINATION – MODULE H

PAPER 2

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ANSWER ALL QUESTIONS

	MARKS
<p>Q9 Discuss with the examiner any TWO of the following horticultural machines:</p> <ul style="list-style-type: none"> i) turf aerator; ii) rotary mower; iii) knapsack sprayer. 	20
<p>Q10 On the pro-forma provided, using common names for the pest/disease/disorder and latin names for the host plant:</p> <ul style="list-style-type: none"> a) Identify EACH of the pests and host, diseases and host, plant and disorders numbered 1 – 15. b) State ONE suitable control strategy for EACH, from chemical (the mode of action only), cultural OR biological methods, as appropriate. 	30
<p>Q11 On the pro-forma provided, identify the plant specimens numbered 16 – 40, giving in EACH case the generic name, specific epithet (if applicable) and the cultivar OR variety name (if applicable).</p>	50
<p>Q12 On the pro-forma provided, identify the substances numbered 41 – 45 and state the main horticultural use of EACH.</p>	10
<p>Q13 On the pro-forma provided, identify the seeds and weeds numbered 46 – 55. State in EACH case, the generic name for the seed specimens, and the generic name with specific epithet for the weed specimens.</p>	20
<p>Q14 Using the pro-forma provided, answer EACH of the questions for the equipment numbered 56 – 58.</p>	10

Please see over/.....

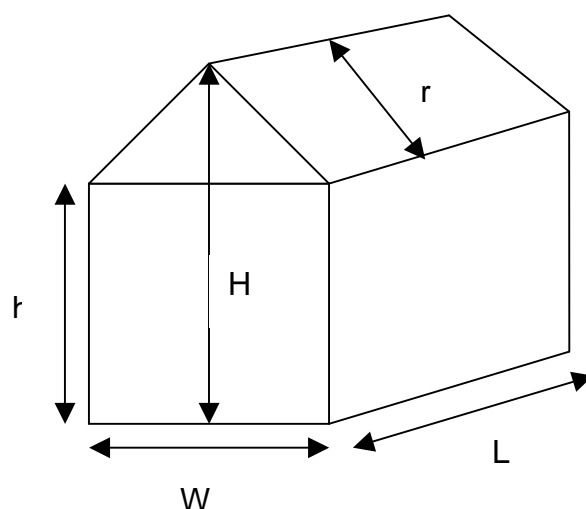
ANSWER ALL QUESTIONS

MARKS

- Q15** Using the pro-forma provided, identify **ONE** distinct plant adaptation for **EACH** of the specimens numbered **59 – 68**. State **ONE** advantage to the plant for **EACH** of the adaptations.

20

- Q16** For the glasshouse labelled Question16:



- a) Calculate the glass area of the glasshouse. **6**

- b) Calculate the number of fungicidal fumigants to be used in the glasshouse if each fumigant covers 8m^3 . **6**

- c) Calculate the kilowatt capacity of a heating unit for the glasshouse using the following information.
 - i) Heat loss factor for glass is $5.7\text{W/m}^2/^{\circ}\text{C}$ difference/hour.
 - ii) Temperature lift has been calculated for the winter period as 21°C .
 - iii) Accidental heat loss has a factor of 1.4.
 - iv) $1000\text{W} = 1\text{kW}$. **8**

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RHS LEVEL 3 DIPLOMA IN HORTICULTURE JULY 2010

PRACTICAL EXAMINATION – MODULE H

PAPER 1

Friday 23 July 2010

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ANSWER ALL QUESTIONS

MARKS

Q1 Prepare and insert **THREE** cuttings at appropriate spacing, for **EACH** of the methods listed, using the plant material provided. Select an appropriate container and a suitable rooting medium for each:

- | | | |
|------|-----------------------------|---|
| i) | evergreen hardwood cutting; | 4 |
| ii) | softwood cutting; | 4 |
| iii) | leaf petiole cutting; | 4 |
| iv) | leaf lamina cutting. | 4 |

Proficiency mark	4
------------------	---

Q2 Using the scion wood provided, chip bud, one bud on to **EACH** of the **TWO** rootstocks labelled **A**. **20**

Proficiency mark	10
------------------	----

Q3 In discussion with the examiner, evaluate the seed sowing in drills, broadcast seed sowing and turfing as indicated. **24**

Q4 Prune **EACH** of the plant specimens labelled **B**, **C** and **D** in order to complete the annual plant maintenance. Assume that it is the appropriate time of year for this work to be carried out.

The examiner will ask you for the recommended time of the year pruning should be completed for each shrub. **15**

Leave all the prunings on the work bench.

Proficiency mark	3
------------------	---

Please see over/.....

ANSWER ALL QUESTIONS

	MARKS
Q5 Using the pro-forma provided, review the landscaped area indicated and answer EACH of the following: <ul style="list-style-type: none"> i) Identify and record EIGHT plants (not weeds) in the area. ii) Identify and record FOUR visual examples of plant damage caused by a NAMED pest OR disease. iii) Recommend FOUR plants, which could be added to this border to provide interest for the visitor in December. iv) State FOUR important maintenance operations for this area. 	30
Q6 Using the pro-forma provided, review the TEN seed trays that have been sown with fine or medium seed. Evaluate the seed tray preparation and the standard of seed sowing.	20
Q7 Using the pro-forma provided: <ul style="list-style-type: none"> i) Identify, using generic and specific names, the lawn grass within EACH of the circles marked E, F and G. ii) Identify, using generic and specific names, the lawn weeds marked H, I and J. iii) State an acceptable method of cultural control for EACH of the weeds identified in ii). 	6 6 6
Q8 The lawn area indicated is to be sprayed with a selective herbicide using a knapsack sprayer. Using the pro-forma provided, identify any visible hazards associated with this task.	20
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RHS LEVEL 3 DIPLOMA IN HORTICULTURE JULY 2010

PRACTICAL EXAMINATION – MODULE H

PAPER 2

Friday 23 July 2010

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ANSWER ALL QUESTIONS

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<p>Q9 Discuss with the examiner any TWO of the following horticultural machines:</p> <ul style="list-style-type: none"> i) turf scarifier; ii) cylinder mower; iii) knapsack sprayer. 	20
<p>Q10 On the pro-forma provided, using common names for the pest/disease/disorder and latin names for the host plant:</p> <ul style="list-style-type: none"> a) Identify EACH of the pests and host, diseases and host, plant and disorders numbered 1 – 15. b) State ONE suitable control strategy for EACH, from chemical (the mode of action only), cultural OR biological methods, as appropriate. 	30
<p>Q11 On the pro-forma provided, identify the plant specimens numbered 16 – 40, giving in EACH case the generic name, specific epithet (if applicable) and the cultivar OR variety name (if applicable).</p>	50
<p>Q12 On the pro-forma provided, identify the substances numbered 41 – 45 and state the main horticultural use of EACH.</p>	10
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<p>Q14 Using the pro-forma provided, answer EACH of the questions for the equipment numbered 56 – 58.</p>	10

Please see over/.....

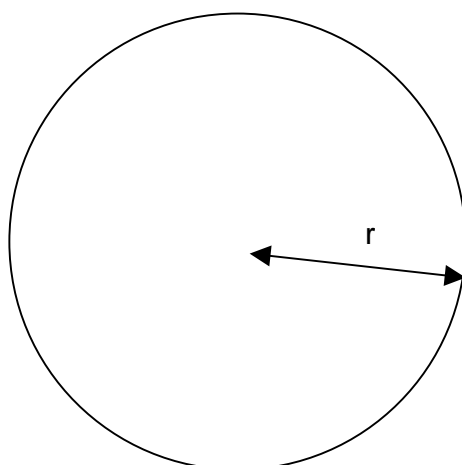
ANSWER ALL QUESTIONS

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- Q15** Using the pro-forma provided, identify **ONE** distinct plant adaptation for **EACH** of the specimens numbered **59 – 68**. State **ONE** advantage to the plant for **EACH** of the adaptations.

20

- Q16** For the circular border labelled Question16:



- a) Identify a straight nitrogen fertiliser which can be applied to the border.

4

- b) Calculate the area of the circular border.

6

$$\pi = 3.142 \text{ or } \frac{22}{7}$$

- c) Calculate how much of the nitrogen fertiliser identified in a) will be required for the circular border if the nitrogen nutrient requirement is 28 g/m².

10

180

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RHS Level 3 Diploma in Horticulture July 2010

Practical examination - Module H

Candidates Registered	89		Total Candidates Passed	64	84.21%
Candidates Entered	76	85.39%	Passed with Commendation	18	23.68%
Candidates Absent	8	8.99%	Passed	46	60.53%
Candidates Deferred	4	4.50%	Failed	12	15.79%
Candidates Withdrawn	1	1.12%			

Note regarding two alternate versions of Papers 1 and 2 in 2010

Two versions of the question papers were produced in 2010. To ensure that the integrity of the examination was maintained it was necessary that some questions were changed between centres.

Guidance notes for candidates and tutors

This examination report has been designed to support candidates and tutors preparing for the RHS Diploma Module H practical examination. The report concentrates on areas which candidates found challenging or appeared not to be fully prepared. The RHS hope that prospective candidates and tutors will find the report constructive in the preparation for the Module H practical examination.

The report contains three components.

1) The examination question is recorded with the marks allocated.

2) Specific comments.

These comments relate to:

- a) Was the task completed safely?
- b) Did the candidate use the appropriate resources efficiently?
- c) Was the method used correct and appropriate for the task?
- d) The method used relates to modern* horticultural practices
*within the last 10 years.

3) General comment.

An overall comment on the performance of candidates with each question.

Important Note

A common misconception by candidates is "we must do this the RHS way". There is no RHS way. Examiners mark candidates work with reference to the criteria as recorded under the specific comments in this report.

Paper 1

Q1 Prepare and insert **THREE** cuttings at appropriate spacing, for **EACH** of the methods listed, using the plant material provided. Select an appropriate container and a suitable rooting medium for each:

- | | | |
|------|--------------------|---|
| i) | hardwood cutting; | 4 |
| ii) | semi-ripe cutting; | 4 |
| iii) | leaf bud cutting; | 4 |
| iv) | root cutting. | 4 |

Proficiency mark	4
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Specific comments

The preparation of cuttings needs to be completed carefully. Many candidates did not remove dead/disease leaves from the cutting material.

Semi-ripe cuttings require maturing wood at the base of the cutting. This was not present on many examples.

The root cuttings should be between 2cm and 5cm in length (*Acanthus* spp) and should show which end is the bottom and which end is the top.

General comments

There were many examples of poor knife work which resulted in poor quality cuts to the plant material. There is clearly much confusion in the preparation of semi-ripe cuttings. Candidates are advised not to rush questions of this nature as it most often leads to poor quality presentation of the cutting material.

Alternate

Q1 Prepare and insert **THREE** cuttings at appropriate spacing, for **EACH** of the methods listed, using the plant material provided. Select an appropriate container and a suitable rooting medium for each:

- | | | |
|------|-----------------------------|---|
| i) | Evergreen hardwood cutting; | 4 |
| ii) | Softwood cutting; | 4 |
| iii) | leaf petiole cutting; | 4 |
| iv) | Leaf lamina cutting. | 4 |

Proficiency mark	4
------------------	---

General Comments

The preparation of leaf petiole cuttings was very variable and very long petioles often touching the base of the tray were witnessed with many candidates.

It is absolutely essential to ensure that leaf lamina squares contain a leaf vein to ensure adventitious bud development.

Q2	Using the scion wood provided, chip bud, one bud on to EACH of the TWO rootstocks labelled A .	20
	Proficiency mark	10

Specific comments

Candidates must ensure that the cut made on the stock plant and the scion material must match in respect cambium contact. Several cases of buds being placed upside down on the stock plant were witnessed.

Very poor examples of plant tying with polythene were witnessed which did not support the bud on the stock plant and very quickly became loose in a light breeze.

General comments

Candidates need to practice the technique of producing a scion bud and matching it carefully with the cambium of the stock plant.

Candidates are advised to secure the bud on the stock plant at between 15cm and 25cm height. There were several examples of buds secured below and above these measurements.

Q3	In discussion with the examiner, evaluate the planting and condition of the THREE trees and TWO shrubs indicated.	24
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Specific comments

Candidate responses indicated a good knowledge of this subject matter. Candidates were able to identify and make recommendations on a range of common faults with planting. It must be remembered however, that blackcurrants are planted slightly deeper than the nursery depth in order to assist the stooling of these plants.

General comments

Candidates are advised to spend at least five minutes looking carefully at each of the planted specimens in order to formulate an answer. The examiner encourages candidates to do this before answering all the questions.

Alternate

Q3	In discussion with the examiner, evaluate the seed sowing in drills, broadcast seed sowing and turfing as indicated.	24
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General comments

A good range of candidates' answers which indicated a good understanding of the topic area.

Q4 Prune **EACH** of the plant specimens labelled **B**, **C** and **D** in order to complete the annual plant maintenance. Assume that it is the appropriate time of year for this work to be carried out.

The examiner will ask you for the recommended time of the year pruning should be completed for each shrub.

15

Leave all the prunings on the work bench.

Proficiency mark

3

Specific comments

This examination question proved to be a challenge for the majority of candidates. Three main problems were identified the majority of candidates performance.

- Identification of the plant to be pruned was poor, this resulted in an inappropriate pruning method used.
- Many candidates pruned the specimens to soil level, which was not required for two of the plant specimens. The question asked for annual pruning practices and not rejuvenation pruning.
- Pruning close to buds without leaving snags was poorly conducted by many candidates.

General comments

The plant specimens selected for this examination question should have provided a clear reference for pruning shrubs on an annual basis. Candidates tended to rush this question which resulted in poor quality work and therefore proficiency marks were reduced for many.

Q5 Using the pro-forma provided, review the ornamental shrub border indicated and answer **EACH** of the following:

- Identify and record **EIGHT** plants (not weeds) in the border.
- Identify and record **FOUR** visual examples of plant damage caused by a **NAMED** pest **OR** disease.
- Recommend **FOUR** plants, which could be added to this border to provide interest for the visitor in December.
- State **FOUR** methods of reducing the maintenance time spent on this border.

30

Alternate

Q5 Using the pro-forma provided, review the landscaped area indicated and answer **EACH** of the following:

- Identify and record **EIGHT** plants (not weeds) in the area.

- ii) Identify and record **FOUR** visual examples of plant damage caused by a **NAMED** pest **OR** disease.
- iii) Recommend **FOUR** plants, which could be added to this border to provide interest for the visitor in December.
- iv) State **FOUR** important maintenance operations for this area.

30

Specific comments

The identification of plant material was very variable between candidates. Many candidates could identify the genus but had great difficulty in identifying the species. Many of the pests and diseases were overlooked. At all examination centres there were problems with two spotted mites and scale insects on established plants. These two important pests were not identified by many candidates.

The majority of maintenance operations recorded were very basic and did not provide sufficient detail to be awarded high marks. An example would be to mulch the area to prevent weed growth. It is expected that some detail on the mulching material, the depth of application and the advantage of the material would be included in the candidate's response.

General comments

Candidates need to spend time formulating an answer and then recording it clearly on the examination pro-forma. Marking of these questions proved to be quite difficult as candidates added extra bits to their answers often writing very small and not concisely or using technical language.

Q6 Using the pro-forma provided, review the **TEN** seed trays that have been sown with fine or medium seed. Evaluate the seed tray preparation and the standard of seed sowing.

20

Specific comments

The seed trays had been prepared with one or two errors only for each tray. Two main issues were identified with candidates' responses to this question.

- The majority of candidates did not identify the uneven levels of compost in the seed tray.
- The language used to describe the potential faults in many cases was not technical being extremely general. Examples of poor descriptions included:
 - Looks nice.
 - Could have been better.
 - Needs some improvement.

These statements are not measurable and do not inform the examiner of much detail.

General comments

Candidates are advised to formulate the acceptable standards for tasks such as

seed sowing. A simple checklist quickly produced by the candidate would have clearly identified the majority of the problems represented within the seed trays. It was clear that many candidates are not familiar with this type of question and were unsure on how to present the requested technical information.

Q7 Using the pro-forma provided:

- | | | |
|------|--|----------|
| i) | Identify, using generic and specific names, the lawn grass within EACH of the circles marked E, F and G . | 6 |
| ii) | Identify, using generic and specific names, the lawn weeds marked H, I and J . | 6 |
| iii) | State an acceptable method of cultural control for EACH of the weeds identified in ii). | 6 |

Specific comments

The identification of the grasses and turf weeds was completed correctly by the majority of candidates. Poor spelling, especially with the species names of grasses, was a common occurrence.

Many candidates did not read the question carefully and for section (iii) of the question, information was presented on chemical control which was not requested.

It is expected of this level of examination that candidates should be able to record information concisely and very clearly to ensure answers are correct and not ambiguous.

General comments

Candidates are advised to review their answers to ensure that a range of cultural control measures were recorded. Several candidates recorded 'pull out by hand' as the cultural control measure for all of the weeds identified, which clearly was not suitable for the weeds with rhizomes or stolons.

Q8 The area indicated is to be sprayed with a translocated herbicide using a knapsack sprayer. Using the pro-forma provided, identify any visible hazards associated with this task. **20**

Alternate

Q8 The lawn area indicated is to be sprayed with a selective herbicide using a knapsack sprayer. Using the pro-forma provided, identify any visible hazards associated with this task. **20**

Specific comments

Very good answers were recorded by the majority of candidates. This indicated a very good understanding of this important area.

General comments

It is advisable candidates record their answers in the third tense and thus avoid personal statements such as 'I would' or 'in my opinion'.

Paper 2

Q9 Discuss with the examiner any **TWO** of the following horticultural machines:

- i) turf aerator;
- ii) rotary mower;
- iii) knapsack sprayer.

20

Alternate

Q9 Discuss with the examiner any **TWO** of the following horticultural machines:

- i) turf scarifier;
- ii) cylinder mower;
- iii) knapsack sprayer.

20

Specific comments

The majority of students selected the rotary or cylinder mower and knapsack sprayer. The turf aerator was not selected by any candidates which was surprising as it was a standard turf aerator.

Candidates were aware of the use of the machinery but many appeared to be unclear with respect to the principles of adjusting the machinery for different situations.

General comments

It is strongly recommended that candidates have time to adjust and familiarise themselves with a range of commonly used horticultural machinery.

It is important to understand the daily maintenance of 2 and 4 stroke engines.

Q10 On the pro-forma provided, using common names for the pest/disease/disorder and latin names for the host plant:

- a) Identify **EACH** of the pests and host, diseases and host, plant and disorders numbered **1 – 15**.
- b) State **ONE** suitable control strategy for **EACH**, from chemical (the mode of action only), cultural **OR** biological methods, as appropriate.

30

Q11 On the pro-forma provided, identify the plant specimens numbered **16 – 40**, giving in **EACH** case the generic name, specific epithet (if applicable) and the cultivar **OR** variety name (if applicable).

50

Q12 On the pro-forma provided, identify the substances numbered **41 – 45** and state the main horticultural use of **EACH**.

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Q13 On the pro-forma provided, identify the seeds and weeds numbered **46 – 55**. State in **EACH** case, the generic name for the **seed** specimens, and the generic name with specific epithet for the **weed** specimens.

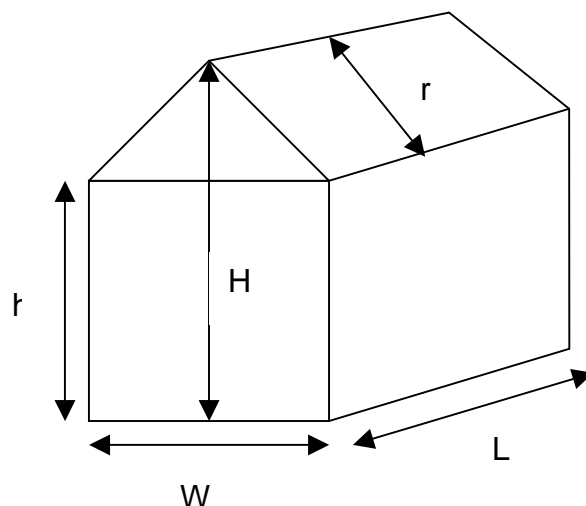
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- Q14** Using the pro-forma provided, answer **EACH** of the questions for the equipment numbered **56 – 58**. **10**
- Q15** Using the pro-forma provided, identify **ONE** distinct plant adaptation for **EACH** of the specimens numbered **59 – 68**. State **ONE** advantage to the plant for **EACH** of the adaptations. **20**

General comments

This examination will require a good knowledge of a wide range of plants/weeds/pests and diseases/disorders and seeds. The specimens used in the identification questions are carefully selected to ensure they represent the many different areas of horticulture. Candidates are advised to study the identification of plants from different groups within horticulture, examples include trees, shrubs, herbaceous perennials, glasshouse plants, and turf weeds. This is not a complete list, but is recorded to provide examples of plant groups using the identification questions.

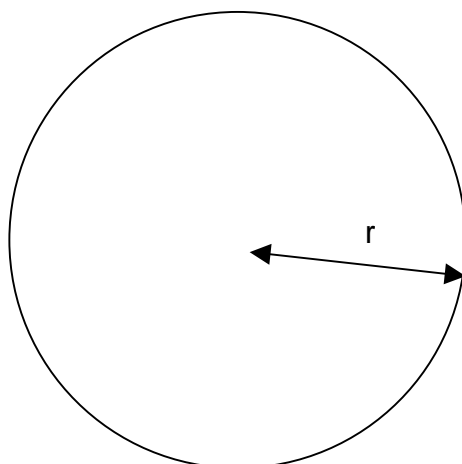
- Q16** For the glasshouse labelled Question16:



- a) Calculate the glass area of the glasshouse. **6**
- b) Calculate the number of fungicidal fumigants to be used in the glasshouse if each fumigant covers 8m^3 . **6**
- c) Calculate the kilowatt capacity of a heating unit for the glasshouse using the following information.
 - i) Heat loss factor for glass is $5.7\text{W}/\text{m}^2/^\circ\text{C}$ difference/hour.
 - ii) Temperature lift has been calculated for the winter period as 21°C .
 - iii) Accidental heat loss has a factor of 1.4.

$1000\text{W} = 1\text{kW}$.

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Alternate**Q16** For the circular border labelled Question16:

- a) Identify a straight nitrogen fertiliser which can be applied to the border. 4

- b) Calculate the area of the circular border. 6

$$\pi = 3.142 \text{ or } \frac{22}{7}$$

- c) Calculate how much of the nitrogen fertiliser identified in a) will be required for the circular border if the nitrogen nutrient requirement is 28 g/m². 10

General comments

Many candidates did not provide any working out data and just provided an answer to the question. In many cases the answer was incorrect and no marks could be allocated to the candidate as there was no evidence of candidate's work on the pro-forma.

It is fully appreciated that there are many different methods used to calculate answers. It was, however, noted that many candidates used long and complex calculation procedures for relatively simple calculations.

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