



**RHS LEVEL 3 DIPLOMA IN HORTICULTURE
WRITTEN EXAMINATION**

**Thursday 10th February 2011
10:00am – 12noon**

MODULE F

**Horticultural Environment & Ecology,
Resource Management in the Horticultural Enterprise**

Section A – Short Answer Questions

Candidate Number:.....

Candidate Name:.....

Centre Number/Name:.....

IMPORTANT – Please read carefully before commencing.

- i) The duration of the papers in Module **F** is **2 hours**.
- ii) Answer **ALL** questions in Section **A**.
- iii) **ALL** questions in Section **A** carry equal 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.

Please turn over/.....

ANSWER ALL QUESTIONS

		MARKS
Q1	Define, with reference to a NAMED example, the term 'climax association'.	2
<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>		
Q2	Distinguish between a halophyte and hydrophyte.	2
<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>		
Q3	Describe FOUR ways by which the environment may be affected by horticultural practices.	2
<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>		
Q4	State FOUR major sources of grant aid available to support environmental conservation on horticultural sites.	2
<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>		

Please see over/.....

Q5 Specify **FOUR** current codes of practice relating to health and safety in the workplace for an area of horticulture. **2**

.....

.....

.....

.....

.....

Q6 Explain what is meant by the term 'plant passports'. **2**

.....

.....

.....

.....

.....

Q7 State **FOUR** barriers to effective communication when instructing or training staff. **2**

.....

.....

.....

.....

.....

Q8 Describe **TWO** types of stock control used to monitor plant sales with reference to a **NAMED** horticultural enterprise. **2**

.....

.....

.....

.....

.....

MARKS

Q9 State **FOUR** types of taxation associated with a small horticultural business.

2

.....

.....

.....

.....

.....

Q10 Define what is meant by the term 'cash flow budget'.

2

.....

.....

.....

.....

.....

©These questions are the property of the Royal Horticultural Society.
They must not be reproduced or sold.

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



**RHS LEVEL 3 DIPLOMA IN HORTICULTURE
WRITTEN EXAMINATION**

**Thursday 10th February 2011
10:00am – 12noon**

MODULE F

**Horticultural Environment & Ecology,
Resource Management in the Horticultural Enterprise**

Sections B & C - Structured Questions

IMPORTANT – Please read carefully before commencing.

- i) The duration of the papers in Module **F** is **2 hours**.
- ii) Answer **ONE** question from Section **B** and **TWO** questions from Section **C**.
- iii) **ALL** questions carry equal marks.
- iv) Write your answers legibly in the answer booklets provided.
- v) Use **METRIC** measurements **ONLY**.
- vi) Where plant names are required, they should include genus, species and where appropriate cultivar.

Please turn over/.....

Secton B – Horticultural Environment & Ecology

Answer **ONE** question only from this section

		MARKS
Q11	a) Differentiate between weather and climate.	2
	b) Explain how FOUR edaphic factors can limit the distribution of plants in the United Kingdom.	8
	c) Explain how climatic factors can affect the horticulturist's choice of plants, within a specific growing location.	10
Q12	a) Describe how NAMED xerophytes are adapted to specific environments.	12
	b) Describe how a range of environmental conditions in the garden can be broadened to allow for the growing of a range of xerophytes.	8

Please see over/.....

Section C – Resource Management in the Horticultural Enterprise

Answer **TWO** questions from this section

		MARKS
Q13	Explain how effective supervisors manage EACH of the following to achieve their objectives:	
	i) safe working environment;	5
	ii) resources;	5
	iii) people;	5
	iv) communication.	5
Q14	a) Describe the key elements of a staff development strategy for a small business in a NAMED section of the horticultural industry.	6
	b) Explain the merits and limitations of 'on the job' training.	5
	c) Describe THREE techniques that may be used to evaluate training effectiveness.	9
Q15	a) Describe what is meant by the term 'quality' with reference to a NAMED horticultural product.	4
	b) List FOUR ways of ensuring quality in the named horticultural product described in a).	4
	c) Describe the benefits that managing quality can contribute to an enterprise.	12
Q16	a) State THREE reasons why it may be important for horticultural businesses to be more market-orientated than production-orientated.	6
	b) Describe how the principles of the marketing mix (price, product, place, promotion) may be applied to the marketing of a NAMED horticultural product or service.	8
	c) Describe how modern communication tools, e.g. the internet, can be used in horticultural marketing.	6

**©These questions are the property of the Royal Horticultural Society.
They must not be reproduced or sold.**

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



RHS LEVEL 3 DIPLOMA IN HORTICULTURE WRITTEN EXAMINATION

10:00am Thursday 10th February 2011

Module F

Horticultural Environment & Ecology

Resource Management in the Horticultural Enterprise

Candidates Registered	34		Total Candidates Passed	24	100%
Candidates Entered	24	70.59%	Passed with Commendation	10	41.67%
Candidates Absent	4	11.76%	Passed	14	58.33%
Candidates Deferred	5	14.71%	Failed	0	-
Candidates Withdrawn	1	2.94%			

Section A – Short Answer Questions

Q1 Define, with reference to a **NAMED** example, the term 'climax association'.

Full marks were awarded to candidates that defined 'Climax Association' as the final stage in development of a particular habitat in which the vegetation had reached an equilibrium and was self-perpetuating.

An example in lowland Britain would be Oak woodland with its associated plant species.

Q2 Distinguish between a halophyte and hydrophyte.

Candidates were awarded full marks where they accurately distinguished between halophytic (salt-rich) and hydrophytic (water, very wet soil) plant adaptations. Better answers gave plant examples together with the type of adaptation to explain their answer.

Q3 Describe **FOUR** ways by which the environment may be affected by horticultural practices.

Most candidates gave a wide range of horticultural practices that were likely to impact on the environment. These included the use of plastics, water conservation, the use of pesticides, the use of fertilizers, land clearance leading to erosion and many more.

- Q4** State **FOUR** major sources of grant aid available to support environmental conservation on horticultural sites.
- Candidates were awarded full marks, where they specified FOUR sources of grant aid. Examples that could have been named were: the National Lottery, The National Trust, English Heritage, the EU, DEFRA, and many local organisations.
- Q5** Specify **FOUR** current codes of practice relating to health and safety in the workplace for an area of horticulture.
- Candidates were expected to mention in their answers any FOUR of the following, HSWA 1973 + Amendments, RIDDOR, COSHH, COPRA, + others. Some candidates lost marks where they concentrated on PPE.
- Q6** Explain what is meant by the term 'plant passports'.
- Most candidates were able to explain the horticultural significance of Plant Passports. Answers should have made reference to the traceability of plants between EU countries and within individual countries, helping to monitor pest and disease problems and that it was a legal requirement. Plant Passports require plants to be accurately labelled.
- Q7** State **FOUR** barriers to effective communication when instructing or training staff.
- Most candidates were able to state FOUR examples of barriers to communication in the work place. Answers could have included: choice and use of language, a particular language, the use of technical jargon, background noise, size of an organisation, ignoring information presented, literacy, and many more.
- Q8** Describe **TWO** types of stock control used to monitor plant sales with reference to a **NAMED** horticultural enterprise.
- Most candidates were able to describe TWO types of stock control, including POS and computerised tills with bar codes, and written documentation, when each time an item is sold a record card is updated.
- Q9** State **FOUR** types of taxation associated with a small horticultural business.
- Candidates were awarded full marks where they were able to state FOUR types of taxation encountered in the horticultural industry. Examples could have included, National Insurance contributions, VAT, Income tax, Excise Duty etc.
- Q10** Define what is meant by the term 'cash flow budget'.
- Most answers were sufficient in detail to be awarded full marks. Candidates were expected to outline that a cash-flow budget is a projection of a business's inflows and outflows over a period of time usually on a monthly basis, that it should predict cash flow gaps in the financial year, and that it should predict a business's ability to take in more cash than it pays out.

Sections B & C – Structured Questions

Section B – Horticultural Environment & Ecology

- Q11**
- a) Differentiate between weather and climate.
 - b) Explain how **FOUR** edaphic factors can limit the distribution of plants in the United Kingdom.
 - c) Explain how climatic factors can affect the horticulturist's choice of plants, within a specific growing location.

a) the examiners were looking for a **clear** distinction between the two.

Weather - daily environmental changes that take place with respect to temperature, rainfall, sunshine, humidity and wind force.

Climate - refers to the overall weather conditions likely to affect a particular area through the seasons. It determines seasonal day-length & temperature changes, annual rainfall and general air currents for a particular area in relation to latitude and position in the UK.

In the second part of the question the answer should have referred to only **FOUR** edaphic (relating to the soil) factors. In each case a mark was given for a named factor plus explanation and another mark for indicating the type of plants (or named example) able to grow in the condition. An example would be soil **pH** - important impact on plants - affecting (for example) mineral (nutrient) uptake; acid soil (pH below 7) calcifuges (example); alkaline soil (pH Above 7) calcicole (example).

In part c) the examiner was looking only for reference to **climatic** factors in a specific (identified by name or area or type) location. A clear explanation of how the factor affects plant growth and thus the choice of plant types for that condition should have been given, for example: **Rainfall**:

Provides water - essential for many basic structural and metabolic needs - e.g. turgidity/photosynthesis/movement of material in phloem/movement of mineral salts in xylem; Lack - dry conditions - limiting factor on photosynthetic rate/reduced NPP - reduced growth; Choice of plants with xerophytic adaptations (example); Excess - wet/water-logged conditions - causing anaerobic conditions in soil/leads to reduced respiration in root systems; limiting factor on mesophytic plants (example) - leads to reduced growth/death; suitable conditions for growth of hydrophytic plants (example);

Potential candidates are reminded that they should ensure they know the distinction between weather and climate. Most were able to do this but there were a few who gave muddled answers.

Candidates should understand the meaning of the word 'edaphic', so as to distinguish these factors from other abiotic ones. Reference to other abiotic factors was not credited. Latitude is not edaphic but causes differences in abiotic conditions. It is important not to deviate from the question as, for example, describing how to ameliorate soil conditions, is not asked for.

It is important to be clear as to how the climatic factors chosen do affect the choice of plants. Just saying 'they affect' is too vague.

- Q12** a) Describe how **NAMED** xerophytes are adapted to specific environments.
- b) Describe how a range of environmental conditions in the garden can be broadened to allow for the growing of a range of xerophytes.

In part a) the examiners were looking for named examples and an account of how they are adapted to the environment in which they live, for example: cactus species (named) - leaves reduced to spines; photosynthesis restricted to stems; water storage in parenchymatous tissue in stems/ expanding ribs; fine close- to- surface roots to collect dew in morning; desert environment. It is important to give a named example and to ensure that the features described match the example chosen.

In part b) examples should be taken from a range of conditions, for example: **Improving drainage** - drainage pipes (severe situation); incorporating gravel / horticultural sand; cultivation to improve pore space; mulch of gravel/shingle; plants raised in containers. It is important to realise that a range of conditions are required and not just 'improved drainage'. Giving an account of how a single species can be successfully cultivated is not required.

Candidates who gave concise answers, clearly distinguishing each point by using a new sentence or a break in the paragraph, were at an advantage. Adherence to the question ensured that points were relevant and extraneous material was not included (which would gain no marks and just wastes time). There is no advantage in writing long paragraphs about one single point. Equally bullet-pointing does not allow for good flow and linking of points.

Section C – Resource Management in the Horticultural Enterprise

Q13 Explain how effective supervisors manage **EACH** of the following to achieve their objectives:

- i) safe working environment;
- ii) resources;
- iii) people;
- iv) communication.

In part a), candidates who were able to apply their detailed knowledge of current health and safety legislation to a horticultural workplace gained high marks.

Section b) was well executed with successful candidates able to show a knowledge of the resources that a horticultural business would have to manage including staff, sub contractors, plant and equipment and information.

In part c), candidates who were able to state detailed factual points reflecting current practice and evidencing reading and research on the subject scored highly, those however who were relying on anecdotal evidence struggled to gain such high marks.

The third part of the question was generally well answered with successful candidates able to relate their answer to communication theory.

- Q14** a) Describe the key elements of a staff development strategy for a small business in a **NAMED** section of the horticultural industry.
- b) Explain the merits and limitations of 'on the job' training.
- c) Describe **THREE** techniques that may be used to evaluate training effectiveness.

The first part of this question asked candidates to describe the key elements of a staff development strategy. Candidates who were aware of the requirements of strategic thinking and were able to talk about the integration of training with the strategic aims of the organisation were able to gain high marks.

Candidates who were able to show an understanding of the factual and correct merits and limitations of on the job training scored high marks in part b). However many candidates did not fully appreciate the merits of such an approach to meeting training needs, with few discussing, for example, the advantages of being trained on the actual equipment used in the work place.

In part c), candidates who referred to common industrial practice such as assessing skills, evaluation forms and methods of being able to measure the ROI (Return on Investment) in training, by for example, measuring cost savings from reduced errors, reduced costs and increased quality scores high marks.

- Q15** a) Describe what is meant by the term 'quality' with reference to a **NAMED** horticultural product.
- b) List **FOUR** ways of ensuring quality in the named horticultural product described in a).
- c) Describe the benefits that managing quality can contribute to an enterprise.

The ability to correctly define quality with reference to a named horticultural product separated candidates who had read and researched such materials for the examination from those relying on anecdotal facts.

This is an important comment as many candidates are let down in this examination by failing to read and research, which allows factual answers, instead relying on anecdotal evidence and life experience. Such candidates are rarely rewarded with high marks.

In part b), very few candidates gave the anticipated answers relating to the use of classic management practices such as Kaizen, or linked quality to training and quality control measures such as inspections.

The answer to part c) relied on both a knowledge of quality management theory with an applied knowledge of the horticultural industry. Candidates who were able to marry these two requirements and produce answers related to productivity increases, cost reduction being lower due to less reworking, increased efficiency leading to cost reduction, increases in customer satisfaction which in turn leads to increased customer loyalty, were able to score high marks.

- Q16** a) State **THREE** reasons why it may be important for horticultural businesses to be more market-orientated than production-orientated.
- b) Describe how the principles of the marketing mix (price, product, place, promotion) may be applied to the marketing of a **NAMED** horticultural product or service.
- c) Describe how modern communication tools, e.g. the internet, can be used in horticultural marketing.

Market orientation versus product orientation is discussed in many marketing texts, in part a), candidates were able to state three justifiable academically correct and relevant reasons to favour market orientation scored full marks, however candidates who relied on life knowledge and anecdotal evidence struggled to achieve such high marks.

In part b), some candidates limited their ability to score high marks through their named horticultural product, however candidates who were able to demonstrate a detailed and thorough knowledge of the principles of the marketing mix scored high marks.

This third section of the question relied on an up to date understanding of the application of SMS messaging, the use of social networking sites to build active digital communities and the use of email marketing campaigns. Candidates able to discuss the application of such technologies scored high marks.

©These questions are the property of the Royal Horticultural Society.
They may not be reproduced or sold.

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