



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

10:00am Thursday 7th July 2011

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 State **TWO** ways by which a supervisor can motivate the workforce. **2**

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Q2 State **TWO** benefits of team building within a horticultural organisation. **2**

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Q3 Evaluate **ONE NAMED** method of improving the efficiency of communication. **2**

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Q4 Describe the process involved in selecting people for interview. **2**

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Please see over/.....

ANSWER ALL QUESTIONS

MARKS

Q5 Distinguish between physical and financial planning.

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Q6 State **TWO** benefits of using ICT for staff records.

2

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Q7 Name **TWO** xerophytic plants that may be used in a scree bed.

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Please turn over/.....

ANSWER ALL QUESTIONS

MARKS

Q8 Define secondary succession.

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Q9 State how the outdoor growing season for tender plants is defined.

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Q10 State **FOUR** environmental factors associated with altitude that will affect the growth of plants.

2

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10:00am Thursday 7th July 2011

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/.....

Section B – Horticultural Environment & Ecology

Answer **ONE** question only from this section

		MARKS
Q11	a) Outline FOUR threats to animals caused by current horticultural practices.	8
	b) Outline the role of EACH of the following in the conservation of plants:	
	i) CITES;	4
	ii) NCCPG;	4
	iii) SSSI.	4
Q12	a) Describe EITHER a woodland OR a heathland ecosystem.	12
	b) Explain the advantages to the horticulturist of understanding the structure and function of ecosystems.	8

Please see over/.....

Section C – Resource Management in the Horticultural Enterprise

Answer **TWO** questions from this section

		MARKS
Q13	a) Describe FOUR types of insurance that apply to the running of a NAMED horticultural enterprise.	8
	b) Describe the importance of taxation within the budgetary planning of the horticultural enterprise named in a).	8
	c) Identify the problems for a garden centre that are presented by changes in VAT.	4
Q14	Describe the advantages and limitations of the following for a NAMED horticultural sector:	
	i) the European Union;	10
	ii) World Wide Trade.	10
Q15	Describe and evaluate FIVE types of record that are kept by a horticultural business in order to manage physical resources.	20
Q16	Describe the processes involved in preparing EACH of the following:	
	i) specification;	5
	ii) quotes;	5
	iii) tenders;	5
	iv) contracts.	5

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Module F

Horticultural Environment & Ecology

Resource Management in the Horticultural Enterprise

Candidates Registered	41		Total Candidates Passed	31	86.11%
Candidates Entered	36	87.80%	Passed with Commendation	7	19.44%
Candidates Absent	1	2.44%	Passed	24	66.67%
Candidates Deferred	3	7.32%	Failed	5	13.89%
Candidates Withdrawn	1	2.44%			

Section A – Short Answer Questions

Q1 State **TWO** ways by which a supervisor can motivate the workforce.

Most candidates were able to show in their answers that they had a sound knowledge of how the workforce can be motivated. A wide range of correct answers were presented and full marks were awarded accordingly.

Q2 State **TWO** benefits of team building within a horticultural organisation.

The majority of candidates were able to show in their answers the benefits of team – building to an organisation. Most mentioned improved productivity, improved self – esteem and better working relations, however, a wide range of correct answers were presented for this question and full marks were awarded for any suitable alternative answer.

Q3 Evaluate **ONE NAMED** method of improving the efficiency of communication.

Candidates were able to state one method of improving efficiency of communication, but often failed to evaluate the method stated. Better answers evaluated the method stated giving examples of how communication was improved by linking it to a particular situation and were awarded full marks.

Q4 Describe the process involved in selecting people for interview.

Full marks were awarded where candidates **sequenced** the process involved and included in their answer, person specification or job description, post advertisement, candidate selection, and calling for interview.

Q5 Distinguish between physical and financial planning.

Most candidates were able to distinguish between physical planning, that is resources in terms of stock, equipment, materials, buildings and personnel and financial planning basically cash-flow management within an enterprise. Candidates were awarded full marks where they were able clearly to distinguish between the two.

Q6 State **TWO** benefits of using ICT for staff records.

A wide range of benefits of the use of ICT for managing staff records was correctly presented in answers by most candidates, gaining full marks. However some candidates repeated the same point and lost marks as a result. Better answers included the ease of collating and retrieving staff data, the fact that such systems are able to store vast amounts of information and that it is an environmentally friendly (paperless) system of record keeping.

Q7 Name **TWO** xerophytic plants that may be used in a scree bed.

Candidates that gave two fully named xerophytic plants that were suitable for growing in a scree bed gained full marks. Many candidates that gave only a generic name followed by spp., lost marks. Many types of alpine and succulent plants show xerophytic adaptations that are suitable for planting on a scree bed; few candidates identified plants belonging to either of these groups in their answers.

Q8 Define secondary succession.

Candidates gained full marks where they clearly explained that secondary succession replaced primary growth after a natural or managed intervention such as a forest fire or clear-felling. There were many other examples of this clearly identified by candidates in their answers who were rewarded with full marks accordingly.

Q9 State how the outdoor growing season for tender plants is defined.

Basically this is the growing period in a temperate northern hemisphere season, between the last frost of spring and the first frost of autumn. Candidates that succinctly stated this were rewarded with full marks.

Q10 State **FOUR** environmental factors associated with altitude that will affect the growth of plants.

Candidates were awarded full marks where they stated that higher wind speed, an increase in the UV light levels, a decrease in temperature and an increase in precipitation were factors that affected plant growth at altitude. Candidates lost marks where they specified and described soil types and conditions which were not asked for.

Sections B & C – Structured Questions

Section B – Horticultural Environment & Ecology

- Q11** a) Outline **FOUR** threats to animals caused by current horticultural practices.
- b) Outline the role of **EACH** of the following in the conservation of plants:
- i) CITES;
 - ii) NCCPG;
 - iii) SSSI.

In part a, the examiners were looking for a short account as to how each of four horticultural practices threaten the well-being of animal life. Each threat should be clearly linked to a practice, for example: the use of pesticides to control pest species such as aphids on vegetable crops. This practice can also directly kill non-target species such as ladybirds and lacewings so reducing their populations leading to a decline in species diversity overall. In some cases pesticides can bioaccumulate in the tissues of certain animal species (but not kill them) and can biomagnify in the tissues of animals further up the foodchain leading to detrimental effects at the top of the foodchain, either killing the individuals or causing a decline in the population through other means, e.g. the thinning of eggshells so that embryos do not survive. Some other practices include the reduction in hedgerows and native flower areas to create larger spaces for crop production; the continued use of peat; the use of artificial fertilisers in amounts which result in leaching into adjacent water courses; etc.

Candidates should limit their ideas to those associated with horticultural practices and avoid becoming confused with global issues of deforestation and UK agricultural practices of farming wheat and barley. The focus needed to be on 'threats to animals'. Damage to native plant species by herbicide use will only attract marks if linked to a decline in animal food availability and nesting sites. When using fertiliser application as a threat, ensure the process of eutrophication in adjacent water bodies is explained correctly. Algal blooms in themselves do not cause a decline in oxygen levels in water, this only follows when algae and water plants die and decompose. If choosing carbon dioxide emissions from machinery as a threat ensure that the 'threat' is correctly explained. It is the **enhanced** greenhouse effect which is the problem, causing changes in global climate patterns and shifting biomes. Also, do not confuse the threats of pesticide use and fertiliser use; the threat of each is different!

In the second part of the question marks were given for the name of the organisation or designation, its aim, i.e. what it sets out to protect/conservate, and how it brings this about.

CITES - The Convention on International Trade in Endangered Species, CITES (entered into force in 1975). The aim of the Convention is to **protect** certain plants and animals being **threatened with extinction** by **regulating and monitoring their international trade** to prevent it reaching unsustainable levels. The United Kingdom has been a Party to the Convention since 1976 & DEFRA has a CITES licensing team.

Plant Heritage (formerly The National Council for the Conservation of Plants & Gardens - NCCPG) - to encourage the conservation of **cultivated plants** in the British Isles, supporting and publishing research into these plants, their origins, their historical and cultural importance and their environments and helping to educate the public in the importance of cultivated plant conservation.

Plant Heritage National Plant Collection scheme is the main conservation vehicle where individuals or organisations undertake to document, develop and preserve a comprehensive collection of one group of plants in trust for the future.

Sites of Special Scientific Interest (SSSIs) (are designated by Natural England under the Wildlife and Countryside Act (1981). They set out to **protect** areas of particular interest because of their **special plants, animals, geological features or land forms**. Owners of such areas are provided with an ideal management plan and there may be grants available to carry these out.

Q12 a) Describe **EITHER** a woodland **OR** a heathland ecosystem.

b) Explain the advantages to the horticulturist of understanding the structure and function of ecosystems.

In the first part of the question, examiners were looking for a broad account of either ecosystem. Suitable points to include would be a definition of an ecosystem; an account of the structure of the system (e.g. the various layers in a woodland); the food web relationships between flora and fauna; the interspecific and intraspecific competition taking place; abiotic factors affecting species diversity; the importance of animal life in ensuring the continuity of plant life through pollination and seed dispersal; the importance of decomposition and nutrient cycling. Marks were allocated for up to four suitable (correctly named) plant examples associated with the ecosystem.

Candidates who gave a broad account of features of either ecosystem together with sufficient detail of each point gained high marks. Good choice of suitably named plant examples linked to ecosystem structure also gained marks. Care should be exercised not to be diverted into giving a detailed account of succession. This was not directly asked for, although a mention of this could have been included within the overall answer.

In the second part, the examiners were interested in the importance of understanding ecosystems thus enabling the horticulturist to apply this knowledge to improve the growth and health of cultivated plants. Points which could be included are an understanding of the effects of abiotic factors on plant growth (and specific genera) enabling the correct growing conditions to be provided; the interdependence on animals and plants thus ensuring that suitable areas in the garden are provided for, example, pollinators and predators; an understanding of competition so that correct spacing between seedlings/plants and the need to control weeds is appreciated; an understanding of the effects of excessive use of pesticides and fertilisers so limiting their use or finding alternatives.

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. Candidates are also reminded to adhere to the instructions on the front of the examination paper and thus give the full scientific names of plant species used as examples in answers. A misconception frequently noted is that the plural of genus is **genera**.

Section C – Resource Management in the Horticultural Enterprise

- Q13** a) Describe **FOUR** types of insurance that apply to the running of a **NAMED** horticultural enterprise.
- b) Describe the importance of taxation within the budgetary planning of the horticultural enterprise named in a).
- c) Identify the problems for a garden centre that are presented by changes in VAT.

This was a very popular question with many candidates who gave factually detailed answers scoring high marks. It should however be noted that National Insurance was not considered to be a valid answer by the examiners as this is a tax not an insurance policy that a horticultural business would take out. Candidates who considered the full effect of taxation on the development of a budget, with reference to the effect Income Tax and National Insurance have on employment costs, the planning for VAT payments, penalties for late returns etc gained high marks. Candidates who simply stated what they knew about the different forms of taxation however, without linking this knowledge to the question, did not achieve high marks.

- Q14** Describe the advantages and limitations of the following for a **NAMED** horticultural sector:

- i) the European Union;
- ii) World Wide Trade.

Few candidates answered this question which was designed to allow candidates to show a detailed factual knowledge of the effect that the European Union and World Trade have on the horticultural industry. Candidates who showed a detailed knowledge of these areas, including the effect of the single currency, plant health regulations and free trade amongst member states, scored highly.

- Q15** Describe and evaluate **FIVE** types of record that are kept by a horticultural business in order to manage physical resources.

This question related to the types of record a horticultural business would keep to manage physical resources. Candidates who were able to relate their answer directly to the management of physical resources discussing the ways that stock usage is recorded, planning of resource requirements, maintenance records, waste records etc gained high marks. However candidates who related their answers to the management of human resources (staff) were deemed not to have answered the question and therefore scored considerably fewer marks.

Q16 Describe the processes involved in preparing **EACH** of the following:

- i) specification;
- ii) quotes;
- iii) tenders;
- iv) contracts.

Candidates were expected to be able to describe the process involved in the production of specifications, quotations, tenders and contracts. The question did not require answers relating to the ways that customers would deal with such documents or simple definitions of terms. However, candidates who considered for example how an effective specification was delivered would consider function, levels of use, quality, finish and, quantity of materials scored very high marks.

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