



Candidate Number:

Candidate Name:

Centre Number/Name:

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

Thursday 6th July 2006

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.

Module F

**Ecology and Environment
Resource Management**

Section A - Short Answer Questions

Please turn over/.....

ANSWER ALL QUESTIONS

Marks

Q1 Distinguish between allogenic and autogenic succession.

2

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Q2 State **FOUR** characteristics of a hydrophyte.

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Q3 State how the monitoring of **FOUR** abiotic environmental factors would help the establishment of plants.

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Please see over/.....

ANSWER ALL QUESTIONS

Marks

Q4 Differentiate between the general climatic conditions experienced in the **EAST** and the **WEST** of the British Isles.

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Q5 Define the significance of a Plant Passport and state when it may be required.

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Q6 Identify, in the technique of time management, **FOUR** categories into which tasks undertaken should be placed.

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Q7 State **FOUR** types of record used in the management of land.

2

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Please turn over/.....

ANSWER ALL QUESTIONS

Marks

Q8 State what is meant by ISO 9000.

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Q9 Explain why, In a small business, cash flow management is important.

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Q10 State the meaning of break-even point and how it is calculated.

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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.

Module F

**Ecology and Environment
Resource Management**

Sections B & C

Structured Questions

Please turn over/.....

Section B – Ecology and Environment

Answer **ONE** question only from this section

		Marks
Q1	a) Explain the importance of plants as energy producers within ecosystems.	6
	b) Explain, with the use of examples, how energy is 'lost' at every stage of the food chain.	10
	c) Using this knowledge, describe how food production could be made more efficient.	4
Q2	a) Describe how xerophytes are adapted to survive in their particular environment.	12
	b) Review the use of FOUR NAMED xerophytes within a garden situation.	8

Section C – Resource Management

Answer **TWO** questions from this section

		Marks
Q3	a) Describe ONE theory of motivation.	6
	b) Explain, with reference to theory, the practical actions a manager can make to improve motivation at work.	8
	c) Explain the merits and limitations of using a performance-related pay scheme.	6
Q4	a) State THREE reasons why it may be more important for businesses to be more market-orientated than production-orientated.	6
	b) Describe how the principles of the marketing mix (Product, Place, Price, Promotion) may be applied to the marketing of a NAMED horticultural product, or service.	8
	c) State TWO market research methods and for EACH , explain their limitations.	6

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| Q5 | a) Describe the requirements of TWO current NAMED regulations that were introduced to improve safety at work. | 12 |
| | b) Evaluate food safety legislation and relate it to an area of horticulture. | 8 |
| Q6 | a) Describe the importance of taxation within budgetary planning. | 8 |
| | b) Describe the key components AND functions of a trading, profit and loss account. | 6 |
| | c) Explain how a business may be profitable and yet still fail. | 6 |



RHS LEVEL 3 DIPLOMA IN HORTICULTURE WRITTEN EXAMINATION

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Module F

Ecology and Environment Resource Management

Examiners Comments

Candidates Registered	51		Total Candidates Passed		
Candidates Entered	45	88.24%	Passed with Commendation	6	13.33%
Candidates Absent	3	5.88%	Passed	31	68.89%
Candidates Deferred	3	5.88%	Failed	8	17.78%
Candidates Withdrawn	0				

Section A - Short Answer Questions

Q1 *Distinguish between allogenic and autogenic succession.*

Most candidates explained this correctly, autogenic succession arising out of natural plant succession over time to reach a natural climax vegetation. Allogenic succession occurs due to the environmental, climatic or mankind, mainly abiotic factors. A specific example for each type of succession earned highest marks.

Q2 *State **FOUR** characteristics of a hydrophyte.*

There was plenty of possible answers and candidates did well with this question. Plants living in water have many adaptations of root, leaf, stem, flower and internal organs to enable them to grow successfully. An example of each characteristic often helped to clarify the candidates suggestions.

Q3 *State how the monitoring of **FOUR** abiotic environmental factors would help the establishment of plants.*

The identification of abiotic factors such as temperature, humidity, wind and rain was well done but some candidates failed to name four. The question asked HOW it would help plant establishment and thus needed a brief statement of what ACTION could be taken in each case e.g. TEMPERATURE adjusted by shading/increasing ventilation or heating a greenhouse.

Q4 *Differentiate between the general climatic conditions experienced in the **EAST** and the **WEST** of the British Isles.*

Whilst the east experiences a more continental climate, the west has a maritime one strongly influenced by the gulf stream. Climatic factors such as rainfall, humidity, wind and average temperature are all generally higher in the west whilst factors such as snow and sunshine hours are usually higher in the east which also has more extreme temperatures. Good candidates created a small 3 column table headed FACTOR, EAST and WEST which enabled a clear answer to be quickly created.

Q5 *Define the significance of a Plant Passport and state when it may be required.*

Many candidates overstated the need for these and some sweeping and inaccurate statements were offered. In fact it is an EEC system aimed at reducing the spread of important and specific pathogens (quarantine pests and diseases). This is achieved through requiring certain named host plants to carry a passport issued by the supplier. Passports are issued by registered growers who are inspected, to ensure that the plants grown/supplied are as free from the specific pathogen as possible. It is not intended to control the spread of all pests and diseases and cannot be relied on as a guarantee. Good answers mentioned fireblight as one of the named pathogens, the spread of which is curtailed by the requirement of plant passports.

Q6 *Identify, in the technique of time management, **FOUR** categories into which tasks undertaken should be placed.*

This question is about recognising the difference between tasks, which are important to the crop/business, and those, which are urgent. The temptation to prioritize jobs on the basis of urgency needs to be resisted. Thus tasks should be categorized as urgent and important, important but not urgent, urgent but not important and finally, not urgent and not important. Time (labour) is too expensive to waste on unproductive tasks.

Q7 *State **FOUR** types of record used in the management of land.*

Well answered by most candidates, examples of records included land maps, cropping history, drainage and service maps, fertiliser and herbicide applications, floral surveys pH and soil analysis. Machinery usage and financial records are primarily about the use of resources other than land and are therefore not valid.

Q8 *State what is meant by ISO 9000.*

This was not well answered and there were too many wild guesses, ISO9000 is an international standard for quality management systems and replaced BS 5750. Importantly, it assesses the quality of management systems and procedures rather than products/services directly. Organisations who achieve the required standard use it as a marketing tool on official paperwork and in some cases it is a requirement of contractors that they have this standard in order to tender for government work. In horticulture as in other industries, achieving such recognised standards gives organisations a marketing edge over their competitors.

Q9 *Explain why, In a small business, cash flow management is important.*

Cash flow records the flow of money into and out of a business. It is about the current account where major surpluses are wasted because of no or very low interest and deficits need overdraft arrangements. The active management of cash flow is thus essential for business survival and avoidance of waste. In small firms (and horticulture is an industry with very larger numbers of these), cash flow problems frequently lead to business failure, as income is often seasonal and variable whilst expenditure is regular and significant. Good answers identified that many small businesses fail through cash flow problems rather than lack of profitability.

Q10 *State the meaning of break-even point and how it is calculated.*

Candidates generally had trouble with this question although the meaning was well understood. It is the point (the level of trading) at which all costs have been met and neither a profit nor loss made. Calculated by fixed (indirect) costs divided by contribution (gross margin) per item. Contribution = revenue less variable (direct) costs. Candidates generally need a much better understanding of the costing process (including overheads) in order to answer questions such as this.

Section B – Ecology and Environment

- Q1**
- a) *Explain the importance of plants as energy producers within ecosystems.*
 - b) *Explain, with the use of examples, how energy is 'lost' at every stage of the food chain.*
 - c) *Using this knowledge, describe how food production could be made more efficient.*

The importance of plants as energy producers within ecosystems caused some problems. Factors such as light energy from the sun being converted to chemical energy by photosynthesis to produce a supply of carbohydrates for growth, and to provide food for animals and humans in the subsequent trophic levels, was barely mentioned. Without plants as producers, there would be no life on earth

Energy is 'lost' three ways: through waste (faeces), heat (through respiration), and movement energy. The use of diagrams showing the trophic levels in an example foodchain and the energy 'lost' at each stage gained the highest marks.

The final section looked at how food production could be made more efficient, from examining the process of energy 'loss' through food chains. From an energy point of view as an example, it is more efficient to use land for crops to feed humans, than to use land for grazing animals which are then eaten by humans. Any appropriate factors were rewarded however.

- Q2** a) *Describe how xerophytes are adapted to survive in their particular environment.*
- b) *Review the use of **FOUR NAMED** xerophytes within a garden situation.*

Xerophytic adaptations were well described, including examples such as sunken stomata, CAM, 'rain' roots, high root:shoot ratios, modified leaves (spines), multiple epidermis, rosette forms, hairs and silvery foliage amongst others. Large, labelled diagrams were useful to illustrate the modifications described.

Better Candidates appreciated that full latin names are required to gain full marks along with appropriate garden uses. Where tender xerophytes were quoted, marks were not gained unless their cultivation requirements were noted (e.g. generally requiring protection or bringing inside over winter).

Section C – Resource Management

Candidates had generally prepared well for this module and there were few instances of poor examination technique, however finance and legislation appear to be syllabus areas where candidates have most difficulty. Strong candidates provided well-structured responses, used specific horticultural examples and described relevant theory clearly and accurately. Weaker candidates did not demonstrate sufficient understanding of principles or practice. Overall too few examples of horticulture were provided in responses and weaker candidates appeared to have insufficient understanding of the practical and unique problems faced by the industry.

- Q3** a) *Describe **ONE** theory of motivation.*
- b) *Explain, with reference to theory, the practical actions a manager can make to improve motivation at work.*
- c) *Explain the merits and limitations of using a performance- related pay scheme.*

This question on motivation was in three parts and was generally well answered by candidates. The first part required a description of one theory of motivation. Strong candidates accurately described a named theory, weaker responses made no reference to a theory or provided an inaccurate description of the theory

The second part required an explanation of the practical actions that may be taken to improve motivation at work. Better answers provided a broad range of practical actions and made specific reference to a theory in the responses, weaker answers often provided only a limited range of actions or were unable to demonstrate sufficient understanding of theory.

The final part required an explanation of the merits and limitations of using a performance-related pay (PRP) scheme. Better responses explained the meaning of PRP and clearly distinguished between merits and limitations in a tabulated response.

- Q4**
- a) *State **THREE** reasons why it may be more important for businesses to be more market-orientated than production-orientated.*
 - b) *Describe how the principles of the marketing mix (Product, Place, Price, Promotion) may be applied to the marketing of a **NAMED** horticultural product, or service.*
 - c) *State **TWO** market research methods and for **EACH**, explain their limitations.*

The first part required a statement of three reasons why it may be more important to be market-orientated, rather than production-orientated. Good responses identified three distinct reasons why a focus on the customer and markets can benefit the business, weaker responses demonstrated insufficient understanding of theory or the horticultural context.

The second part required a description on how the concept of the marketing mix could be applied. Good answers provided a clear and concise description of how these principles could be applied, whilst weaker responses provided a poor description of one or more elements of the mix, particularly the product and place concepts.

The final part required a statement of two market research methods and their limitations. Good responses provided two distinct examples of market research and clearly tabulated the respective limitations.

- Q5**
- a) *Describe the requirements of **TWO** current **NAMED** regulations that were introduced to improve safety at work.*
 - b) *Evaluate food safety legislation and relate it to an area of horticulture.*

This two-part question was on legislation. The first part required a description of two named regulations introduced to improve safety at work. Strong answers gave a clear and detailed account of two specific regulations and how they were applied in practice, weaker responses often failed to name two distinct regulations or discussed in only general terms health and safety legislation and/or Acts.

The second part required an evaluation of food safety legislation applied to horticulture. Most candidates had difficulty answering this part, with too often the responses made having insufficient reference to legislation, or did not evaluate the legislation or were too narrow in the range of examples given. This is an important area of legislation that candidates should prepare for more fully in the future.

- Q6**
- a) *Describe the importance of taxation within budgetary planning.*
 - b) *Describe the key components **AND** functions of a trading, profit and loss account.*
 - c) *Explain how a business may be profitable and yet still fail.*

This three-part question on finance was the question that candidates had most difficulty with a significant proportion demonstrating insufficient understanding of the principles. The first part required a description of the importance of taxation within budgetary planning. Better candidates were awarded for providing specific examples of methods of taxation and actions that could help to reduce the burden of tax and/or the impact on cash flow. Weaker answers identified few examples of taxation or did not understand how important tax planning is in horticulture particularly in the family firm.

The second part required a description of the key components and functions of a trading profit and loss account. Strong responses provided a listing of the key components and concise descriptions, with clear points on how profit could be used as a performance indicator. Weaker responses confused the profit measure with cash flow.

The final part required an explanation of how a business could be profitable and yet still fail. Stronger responses provided a clear indication of the nature of overtrading and clearly distinguished between the profit measure and cash flow. Overall candidates should prepare more fully for this important area of the syllabus in future.