



**Coimisiún na Scrúduithe Stáit**  
**State Examinations Commission**

**Leaving Certificate Applied 2013**

**Marking Scheme**

**Agriculture and Horticulture**

**Common Level**

## **Note to teachers and students on the use of published marking schemes**

Marking schemes published by the State Examinations Commission are not intended to be standalone documents. They are an essential resource for examiners who receive training in the correct interpretation and application of the scheme. This training involves, among other things, marking samples of student work and discussing the marks awarded, so as to clarify the correct application of the scheme. The work of examiners is subsequently monitored by Advising Examiners to ensure consistent and accurate application of the marking scheme. This process is overseen by the Chief Examiner, usually assisted by a Chief Advising Examiner. The Chief Examiner is the final authority regarding whether or not the marking scheme has been correctly applied to any piece of candidate work.

Marking schemes are working documents. While a draft marking scheme is prepared in advance of the examination, the scheme is not finalised until examiners have applied it to candidates' work and the feedback from all examiners has been collated and considered in light of the full range of responses of candidates, the overall level of difficulty of the examination and the need to maintain consistency in standards from year to year. This published document contains the finalised scheme, as it was applied to all candidates' work.

In the case of marking schemes that include model solutions or answers, it should be noted that these are not intended to be exhaustive. Variations and alternatives may also be acceptable. Examiners must consider all answers on their merits, and will have consulted with their Advising Examiners when in doubt.

### **Future Marking Schemes**

Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in a given year. The Chief Examiner in any given year has the responsibility to determine how best to ensure the fair and accurate assessment of candidates' work and to ensure consistency in the standard of the assessment from year to year. Accordingly, aspects of the structure, detail and application of the marking scheme for a particular examination are subject to change from one year to the next without notice.

**Section One**

**(120 marks)**

**Question 1. This is made up of eighteen parts i.e. (a) to (r).**

**Any 12 parts must be answered. All parts carry equal marks (10 marks each).**

**1.**

(a) Name the garden pest shown in the photograph.

Aphid/ greenfly (5)

An **organic** method of controlling this pest is

Ladybirds/ washing up liquid/ garlic oil spray etc. (5)



(b) What is the function of xylem tissue in a plant stem?

Transport of water or transport of minerals (5)

Name **another** plant tissue.

Phloem or any valid tissue (5)

(c) Potting compost is made up of soil, sand and

Peat moss/ Pearlite/ Vermiculite/ fertilizer/ nutrients (5)

Why should you sterilise pots and trays before using them for planting?

To prevent disease/ to kill microorganisms or to kill named microorganisms (5)

(d) Name an Irish tree that produces hardwood.

Oak/ beech/ ash/ Any valid answer (5)

Name a product that is made from hardwood.

Furniture/ Any valid answer (5)



(e) Suggest **two** advantages of using garden matting as shown in the photograph.

1. Prevent weeds/ retain moisture/ warmer soil/ reduce maintenance

2. Any two (5 + 5)



(f) Fertilisers used to improve grass growth are rich in the mineral

Nitrogen (5)

Fertilisers used for flowers and vegetables are rich in the mineral

Potassium or K or potash (5)

(g) When milk is fermented by *Lactobacillus* it changes into the product called

Yoghurt (5)

Name **another** milk product.

Cheese/ curds/ cottage cheese / Any one valid (5)

(h) Name the breed of cattle shown in the photograph.

Simmental or Hereford (5)

In Ireland, this breed is mainly used for the production of

Meat (5)



(i) Give **two** reasons why dairy cattle are ‘dried off’ before calving.

1. Disease control/ allows a build-up of reserves prior to next milking or lactation cycle

2. Any two valid (5 + 5)

(j) Name **two** features shown in the photograph that suggest 'Japanese' garden design.



1. Use of: stone or rocks/ water/ tree colour/ pebble paths
2. Any two valid (5 + 5)

(k) Give **one** reason why planting a tree in the middle of a lawn is considered to be poor garden design.

Breaks up the lawn (as a feature)/ increases lawn maintenance/ shade affects lawn/ Roots affect lawn/ obstructs mowing/ Any one valid (5)

Name **one** feature that would be suitable to use in a garden designed for children.

Secure perimeter (fencing or walls)/ grassy area/ covered sand-pit/ play equipment/ bark chip layer/ Any one valid (5)

(l) Suggest **two** ways in which you could use stone troughs in a garden.



1. Water containers/ bare stone feature/
2. planted with flowers/ Any two valid (5 + 5)

(m) Name a commercially grown flower **or** fruit **or** vegetable.

Name of flower or fruit or vegetable (5)

When is the most suitable time for harvesting this flower **or** fruit **or** vegetable?

Harvesting time to match the named flower or fruit or vegetable (5)

(n) What does this warning symbol mean?

Flammable (5)

Name a substance likely to carry this symbol.

Petrol/ diesel/ propane Any valid (5)



(o) Name **two** additives that can improve the quality of silage.

1. Acid/ molasses or sugar/ enzymes/ enzyme-salt mixture

2. Any two valid (5 + 5)

OR

Name **two** procedures that can improve the quality of hay.

1. Time cutting for when DMD is highest (cut at right time)/ cut in dry weather/ use

2. appropriate machinery/ turn (to dry) Any two valid (5 + 5)

(p) Name a conifer grown in commercial forests in Ireland.

Spruce/ pine/ fir/ larch/ cedar Any valid (5)

Suggest a reason for the uneven growth of the tree rings in the photograph.

Aspect/ weather/ Any valid (5)



(q) How do grass plants transfer their pollen from one plant to another?

Wind (5)

Name **one** other method of pollen transfer.

Insect or named insect Any one valid (5)

(r) Potatoes are a good food source.

Give **another** use for potato tubers in agriculture/ horticulture.

Growing more potatoes/ compost (5)

State **one** reason why potatoes are suitable for this other use.

Buds (eyes)/ can be stored/ food reserve/ decompose easily(5)



**Section Two**

**(120 marks)**

Answer any 4 questions from the following 6 questions, which are based on the modules you have studied. All questions carry equal marks.

**2. BASIC HORTICULTURE**

(a) The substance in the soil formed from the remains of dead plants and animals is called

Humus (3)

(b) Write each task from column C into column B to match an item from column A.  
See shaded example.

| Column A  | Column B                              | Column C                   |
|-----------|---------------------------------------|----------------------------|
| Rake      | <i>To prepare a seed bed</i>          | To make holes for planting |
| Dibber    | <i>To make holes for planting</i> (2) | To prune plants            |
| Sprayer   | <i>To control weeds</i> (2)           | To prepare a seed bed      |
| Secateurs | <i>To prune plants</i> (2)            | To control weeds           |

(c) Soils are formed by the physical and chemical weathering of rock.

Give an example of physical weathering.

Freeze-thaw action/ running water/ friction between stones/ Any valid (3)

Give an example of chemical weathering.

Rain/ acid rain/ dissolving/ Any valid (3)

Why is the soil in a field beside a river often very fertile?

Flooding adds sediment and minerals to the soil (3)

(d) The photograph below shows microorganisms growing in a Petri dish as a result of a soil test.



How would you make sure that the microorganisms you see in the Petri dish come only from your soil sample?

*Sterile growing medium (agar)/ sterile equipment or example/ sterile procedures for the transfer of soil to the Petri dish or example / use of sterile equipment to collect and store the soil sample when collected or example*      Any two steps (2 + 2)

How do these organisms help the soil?

*Breakdown dead organisms*      Any valid answer (2)

Name **two** other soil organisms and give a function of **one** of them.

Name 1. *Earthworms/ millipedes/ centipedes/ insects/ slugs/ fungi*

Name 2. Any two valid (2 + 2)

Function. Any one valid matching function (2)

### 3. GARDEN DESIGN

(a) An example of a plant that flowers in January in Ireland is Snowdrop/ hyacinth Any valid (3)

(b) Indicate whether the following statements are true or false, by ticking  the correct box in each case.

- A pergola is used to support climbing plants. (2) True  False
- Mulch is often made from bark and wood chips. (2) True  False
- A sundial **must** be placed in the middle of the garden. (2) True  False

(c) Identify the lawn maintenance tools below and say what each tool is used for.



**A**



**B**



**C**

Tool A. Aerator/ spiking tool/ allow scarifier (2)

Used for. Making holes for air or drainage/ allow removing moss (1)

Tool B. Rake (2)

Used for. Collect leaves or debris from lawns/ remove moss or dead material from lawns (1)

Tool C. Edging tool or edger (2)

Used for. Creating a sharp edge or a straight edge on lawns (1)

(d) The photograph shows part of a formal garden.



Identify **two** features of a formal garden that can be seen in this photograph.

1. Different plant beds surrounded by low (box)hedging/ sharp lines/ gravel paths/ hedge
2. borders/ symmetry/ Any two valid (2 + 2)

Name a **special** feature you might include in a formal garden.

Fountains/ ponds/ high stone walls/ pergolas/ herb or vegetable garden/ Any valid (2)

Describe how the special feature could be installed.

1. Three main points referring to the correct installation of the chosen feature 3(2)

---

---

2. \_\_\_\_\_

---

---

3. \_\_\_\_\_

---

---

## 4. FLORISTRY, FRUIT & VEGETABLES

(a) When growing flowers, fruit and vegetables, moulds and mildews are controlled using

Fungicide (3)

(b) Complete the sentences in the spaces below, using suitable words from the following list.

**Green      Fertiliser      Insects      Weeds      Wind      Fresh**

- A selective herbicide is used to kill broad leaved Weeds (2)
- Chlorophyll makes plants Green (2)
- Shelf life refers to how long a food product will stay Fresh (2)

(b) In your study of flowers **or** fruit **or** vegetables you looked at ways of adding value to your product by processing it in some way.

Why would producers want to 'Add value' to their products?

More profit/ more markets/ no longer seasonal/ increase shelf life/ eliminate middle

man or eliminate wholesaler      Any valid (3)

In the case of a named flower **or** fruit **or** vegetable describe how you would process it to add value to it.

Name of flower, fruit or vegetable. No Marks – just for context

Process. Freezing/ cooking/ drying/ chilling/ preservatives/ vacuum packing/ novelty packaging  
Any valid (3)

Name the added value product that is produced. Name of matching value-added product (2)

What value has been added to the original flower, fruit or vegetable?

Improved shelf life/ brand recognition/ monetary/ Any valid (1)

(d) Agricultural and horticultural producers in Ireland are told that they should promote a 'green' image in order to sell to a wider market.

What is meant by a 'green' image?

Pure food or organic food/ environmentally friendly production methods / no additives

Any valid (3)

What steps should producers take to promote a 'green' image?

Naturally produced products/ quality assurance schemes/ traceability/ non-intensive methods of production/ carbon rating Any valid (3)

Name an organisation that helps producers to make sure their production methods are 'green'.

Name of the organisation. Bórd Bia/ Bórd Glas/ Institute for International & European Affairs  
Teagasc/ Irish Organic Farmers Association/ Any valid (2)

How does this organisation help producers to make sure their production methods are 'green'?

Advice/ set standards/ monitor/ labelling Any valid (1)

What is meant by 'Farm Gate to Dinner Plate'?

Traceability (refers to the tracing of food and its ingredients from producer to consumer in terms of strict food quality and safety standards). (3)

## 5. FORESTRY

(a) The Irish deciduous tree that has black buds is the Ash/ Mountain Ash/ Rowan (3)

(b) Match each word in column A with a term from column B to give an answer in column C.  
See shaded example.

| Column A      | Column B                      | Column C         |
|---------------|-------------------------------|------------------|
| <b>1 Bud</b>  | <b>a Absorption</b>           | <b>1 + c</b>     |
| <b>2 Bark</b> | <b>b Photosynthesis</b>       | <b>2 + d (2)</b> |
| <b>3 Root</b> | <b>c Young leaf or flower</b> | <b>3 + a (2)</b> |
| <b>4 Leaf</b> | <b>d Waterproof layer</b>     | <b>4 + b (2)</b> |

(c) The photograph below shows an area of cleared forest.



Clearing large areas of forestry, as shown, is called Clearfell (3)

Briefly describe the environmental damage caused by each of the following activities.

The use of large amounts of fertilizer during the early growing phase of a forest.

Excess fertiliser is washed into rivers and streams causing pollution/ damages the natural wild plants which survive in poor or low nutrient soils Any valid (3)

The use of heavy machinery in clearing large areas of forestry.

Destruction of soil due to rutting caused by wheels/ compaction of soil/ pollution or example Any valid (3)

(d) As part of your study of this module you explored the leisure opportunities that our forests can provide.



Outline **four** leisure opportunities provided by our forests.

1. E.g. Trail biking/ other sports

\_\_\_\_\_

2. E.g. Observing wildlife

\_\_\_\_\_

3. E.g. Walking/ jogging

\_\_\_\_\_

4. E.g. Foraging for wild plants/ wild mushroom picking

Any four valid 4(2)

Outline **four** rules that you would expect forest users to obey.

1. Any four valid rules in terms of litter/ fire/ damage to property or plants/ interference

with wildlife or habitats 4 (1)

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

## 6. GRASS

(a) A variety of grass commonly grown in Ireland is (Perennial) Ryegrass Any valid (3)

(b) Indicate whether the following statements are true or false, by ticking  the correct box in each case.

- Hay has a better feed value than silage. (2) True  False
- Leafy grass is best for silage. (2) True  False
- Pesticides are used for weed control. (2) True  False

(c) The photographs show two machines used in the conservation of grass.



A



B

Name each machine.

A. Hay turner/ hay bob (1)      B. Forage harvester (1)

What characteristic of hay prevents it from rotting?

Dry (2)

What characteristic of silage prevents it from rotting?

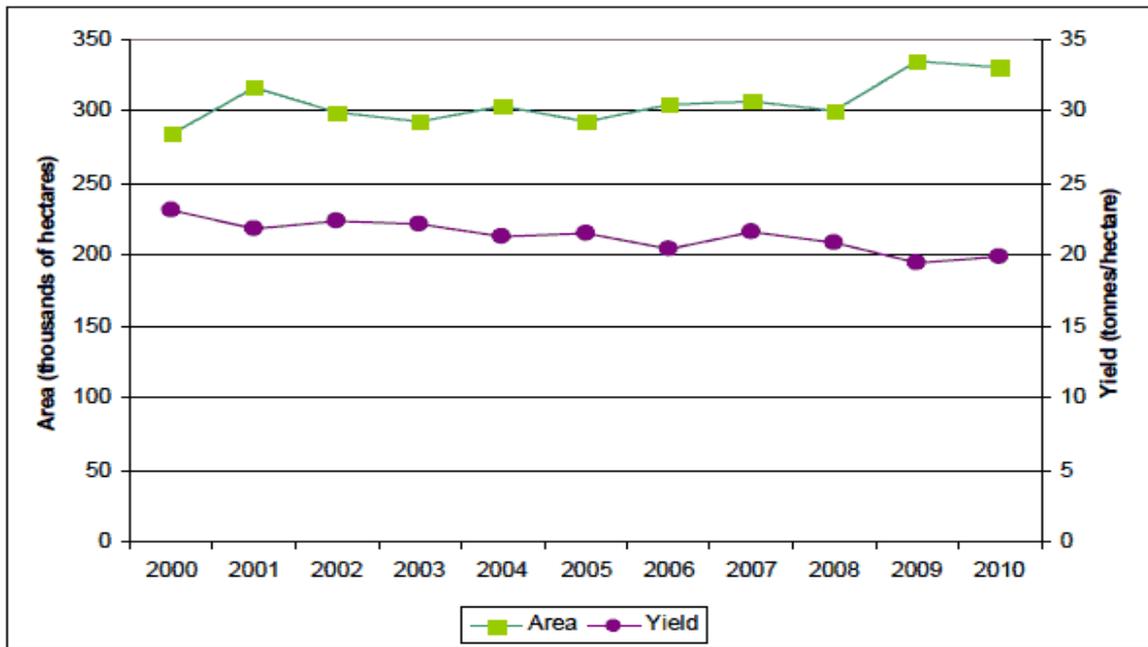
Acid or low pH (2)

Suggest **two** ways in which the production of hay or silage could affect the environment.

1. Loss of habitat/ loss of native species/ pollution/ make more oxygen/ improved biodiversity

2. in meadows Any two valid (2 + 1)

- (d) The graph shows the **area** of land (—■—) and the **yield** of hay/ silage (—●—) for the years 2000 to 2010.



Use the graph above to answer the following questions.

In which year was the **greatest area** of land used for hay/ silage production?

2009 (2)

In which year was the **lowest yield** of hay/ silage recorded?

2009 (2)

Suggest **two** reasons why the yield is low in some years.

- High rainfall/ lower than average sunshine/ low temperatures/ low quality grass seed/ insufficient fertilizer use
- Any two valid (2 + 2)

Suggest **two** ways in which yields might be increased.

- Improve drainage/ use better quality grass seed/ increased use of fertilizer/ more appropriate fertilizer
- Any two valid (2 + 2)

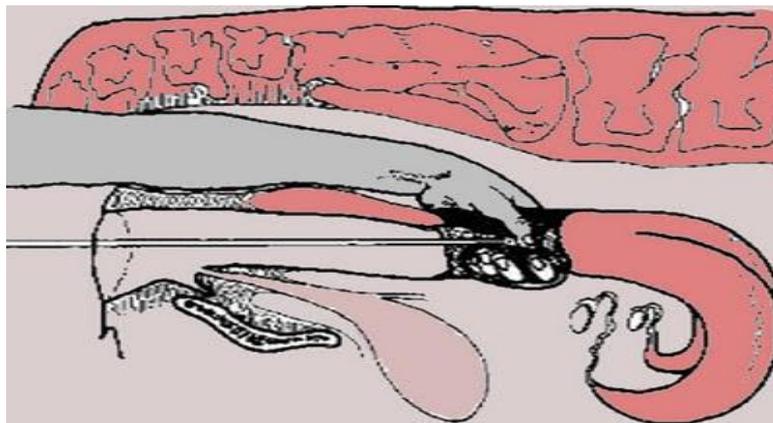
## 7. MILK AND MEAT PRODUCTION

(a) Mastitis is an infection of what body part of the milk animal? Udder (3)

(b) Match each term in column A with a term in column B to give an answer in column C. See shaded example.

| Column A              | Column B               | Column C         |
|-----------------------|------------------------|------------------|
| <b>1 Dual purpose</b> | <b>a Salt lick</b>     | <b>1 + d</b>     |
| <b>2 Hygiene</b>      | <b>b Liver fluke</b>   | <b>2 + c</b> (2) |
| <b>3 Minerals</b>     | <b>c Cell count</b>    | <b>3 + a</b> (2) |
| <b>4 Parasite</b>     | <b>d Milk and meat</b> | <b>4 + b</b> (2) |

(c) The diagram shows artificial insemination (AI) being carried out in a milk or meat producing animal.



What is artificial insemination (AI)?

Placing semen (sperm) into the uterus (womb) of an animal (2 + 1)

Suggest **two** advantages of using artificial insemination (AI)

- Cheaper than having a bull/ disease free/ access to high quality semen/ more servicings/ higher success rate than actual mating/ less risk of injury to animals
- Any two valid (3 + 3)

- (d) As part of your study of this module you visited a milk **or** meat farm. Briefly describe what you learned during your visit by answering each of the following questions.

State a precaution that was taken to prevent diseases being brought onto the farm.

Disinfection of clothing or equipment or vehicles or footwear/ control of vermin/ minimise contact with neighbouring farm animals/ avoid sharing equipment/ strict controls in sourcing and introducing new stock Any one valid (2)

Name a safety measure that was in place with regard to machinery.

Correct use/ no modified equipment/ guards on all moving parts/ safety features in place/ proper training Any valid (2)

What system was in place for the collection of animal effluent?

Scraping systems/ slatted housing/ drains/ pond storage Any valid (2)

What method was used for the disposal of animal effluent?

Land application/ treatment ponds/ constructed wetlands/ barrier ditches Any valid (2)

How did the farmer make sure he/ she had good quality replacement stock?

Use of AI/ registered breeders/ suckler reared animals/ selective breeding using own animals Any valid (2)

What qualification is desirable for a young milk or meat farmer to have?

Various Certificate and Higher Certificate Courses at FETAC level 5, 6, 7 or a B. Ag. at level 8 as listed in the Teagasc website. (2)



