



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Applied 2014

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 tool shown in the photograph.

Dibber (5)

What is this garden tool used for?

Make holes to plant seeds, plants or bulbs (5)



- (b) Name a **tree** that uses wind to scatter its seeds.

Sycamore / lime / elder / maple / ash any valid (5)

Why is it good for the seeds to be scattered away from the tree?

Reduces competition / better chance of survival / greater availability of any named valid factor (5)

- (c) A 'beer trap' is used to control which garden pest?

Slugs or snails (5)

Name another **organic** way of controlling this pest.

Crushed egg shells or other similar abrasives / copper strip / organic pellets / salt
Any valid (5)

- (d) The best time of the year to sow a new lawn is

Autumn or spring (5)

A weed commonly found in lawns is

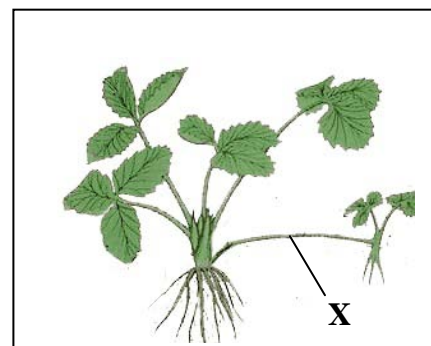
Daisy / dandelion / buttercup any valid (5)

- (e) Name the modified plant structure labelled **X** in the picture.

Runner or stolon (5)

State **one** function of this modified plant structure.

(Asexual) reproduction (5)



- (f) Are the leaves shown in the photograph from a coniferous tree or a deciduous tree?

Coniferous (5)

Name the common Irish tree whose winter twig has black buds.

Ash (5)



- (g) Venison is the meat obtained from which animal?

Deer (5)

What test is used to identify the source of meat in processed food?

DNA testing (5)

- (i) This very dangerous piece of tractor equipment is called a

PTO or power-take-off (shaft) (5)

How would you make this piece of equipment safe?

Cover it (5)



- (j) Name **two** processed milk products.

1. Yoghurt / cheese / ice cream any two valid (5 + 5)

2. _____

- (j) Identify the garden feature shown in the photograph.

Pergola (5)

Name a climbing plant you would use to decorate this structure

Climbing rose / clematis / honeysuckle any valid (5)



(k) Suggest **two** ways in which Teagasc assists the Agriculture and Horticulture industries.

1. Provides information / advice / training / research
2. Any two valid (5 + 5)

(l) Name the grassland weed shown in the picture.

Rush(es) (5)



Other than using weed killer, how might you control this weed?

Cutting / mowing / draining the land (5)

(m) Name a disease of the potato that is common in warm, moist, humid weather.

Blight / powdery mildew / white mould any valid (5)

What type of chemical is commonly used to control this plant disease?

Fungicide or named fungicide (5)

(n) This warning symbol on a bottle of a chemical substance means

Corrosive / strong acid / strong base or strong alkali (5)

Name **one** item of safety equipment you would use when handling this chemical.

Gloves / goggles / appropriate clothing any valid (5)



(o) Give **two** reasons for using artificial insemination (A.I.) to impregnate meat and dairy animals.

1. Access to superior bulls / planned and shorter calving season / variety of bulls /
2. pure breeding / better quality stock / improved yield or improved profitability /
ease of calving / improved genetics any two valid (5 + 5)

(p) Why is there plastic around the base of this young tree?

To protect against rabbit, deer, animal damage (5)

What else could you use to protect young trees?

Chicken wire / metal cage any valid (5)



(q) Suggest a reason why flowers, fruit and vegetables are located at the **entrance** to a shop.

Greater visibility / to sell them quickly (5)

Why are flowers, fruit and vegetables in tiered and sloping displays?

Greater area of display / more visibility / fresher produce up higher (less accessible)

fresh produce lower down encourages purchase of older products any one (5)

(r) Explain what is meant by **each** of the following terms in relation to plant reproduction.

Sexual reproduction: Two parents / sperm and egg (3 + 2)

Asexual reproduction or vegetative reproduction: One parent / (single) cell divides
(3+2)

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 (30 marks each).

2. BASIC HORTICULTURE

- (a) The ripened part of a flowering plant that contains the seeds is called the Fruit (1)
- (b) Write each term from column C into column B to match a structure in column A.

See shaded example.

Column A	Column B	Column C
Stem	<i>Support</i>	Photosynthesis
Leaf	<i>Photosynthesis</i> (2)	Pollination
Root	<i>Absorption</i> (2)	Support
Flower	<i>Pollination</i> (2)	Absorption

- (c) Plant leaves release different gases into the air by day and by night.

The gas released by day is Oxygen [Accept CO_2]

(4, 1)

The gas released by night is Carbon dioxide

Two different types of tissue are involved in transporting materials in plants.

The tissue that transports water is called Xylem

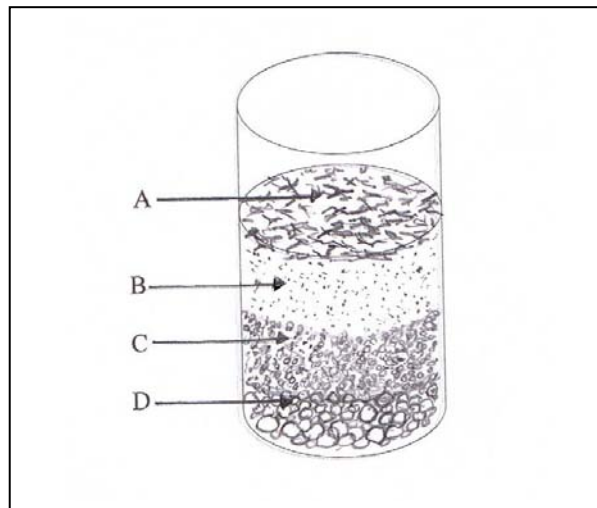
(2, 1)

The tissue that transports food is called Phloem

Name any **three** factors that plants need to make sugar in photosynthesis.

1. CO_2 (1) 2. H_2O (1) 3. Chlorophyll or light (1)

- (d) The diagram below shows the result of an investigation into the composition of a soil sample.



Name the parts of the soil labelled A, B, C and D.

- A. Leaf litter or humus (1) B. Clay (1)
C. Sand (1) D. Small stones or pebbles (1)

In relation to the above investigation:

List **four** items of equipment or material that you used.

Item 1. Trowel / see-through container / soil / water / lid / stirring rod Any four (1+1+1+1)

Item 2. _____

Item 3. _____

Item 4. _____

Outline the **four** main steps in your investigation.

Step 1. Soil into container (1)

Step 2. Add more water than soil (1)

Step 3. Agitate contents (1)

Step 4. Allow to settle (1)

3. GARDEN DESIGN

(a) An ornamental garden feature that is used to tell the time is Sundial (1)

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

- 'Aspect' involves the four points of the compass (2) True ☒ False ☐
- The moss plant loves warm, dry conditions (2) True ☐ False ☒
- Snowdrops are among the first flowers of spring (2) True ☒ False ☐

(c) The photograph below was taken while planting bulbs.



Suggest which flower might grow from the bulbs in the photograph.

Daffodil or any valid (5)

Describe briefly how to plant a bulb.

1. Dig a hole / peat moss into hole / bulb into hole / cover with soil / water
2. Any three (1+1+1)
3. _____

Which plant parts are modified to form the bulb?

Leaves (3)

- (d) The photographs **A**, **B**, **C**, and **D** below show four stages in the planting of seeds but they are not in the correct order.



A



B



C



D

Write the letters in the correct order for the planting of seeds.

B - D - A - C OR D - C - A - B (1)

What is being done in photograph **B**?

Compost being passed through a sieve to give a fine seed bed OR seeds being covered (2)

Large seeds and small seeds are planted in different ways.

Briefly explain how you would plant each type of seed in a seed tray.

Planting large seeds: Make small holes / plant seeds / cover with compost / firmly (3)

Planting small seeds: Scatter seeds evenly over the surface / cover with a fine layer of compost or do not cover, as directed / gently firm the compost (3)

Give **one** reason for covering the seed tray with a sheet of glass or plastic.

Retain water or moisture / warmth

Name a common fungal disease that attacks newly-germinated seedlings.

Damping off / mildew

(3)

4. FLORISTRY, FRUIT & VEGETABLES

- (a) The growing season for flowers, fruit and vegetables can be extended by using

Cloche / polytunnel / greenhouse or glasshouse any valid (1)

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

List: Chilled Minimum Cleaned Graded Maximum Warm

- When harvesting these products, handling should be kept to a Minimum (2)
- During transport to market the produce is always kept Chilled (2)
- To ensure quality for the consumer the produce is always Graded (2)

- (c) In your study of the production of flowers **or** fruit **or** vegetables you looked at ways of controlling weeds, pests and diseases using **organic** methods.

Describe **one** method you would use to **organically** control weeds.

Cut / hoe / hand pull / green mulch / plastic mulch / spray with vinegar / burn with blow torch

Any valid answer and a description of its use (5)

Describe **one** method you would use to **organically** control insect pests such as aphids.

Ladybirds / lacewings / garlic spray / soap suds spray / high pressure water spray

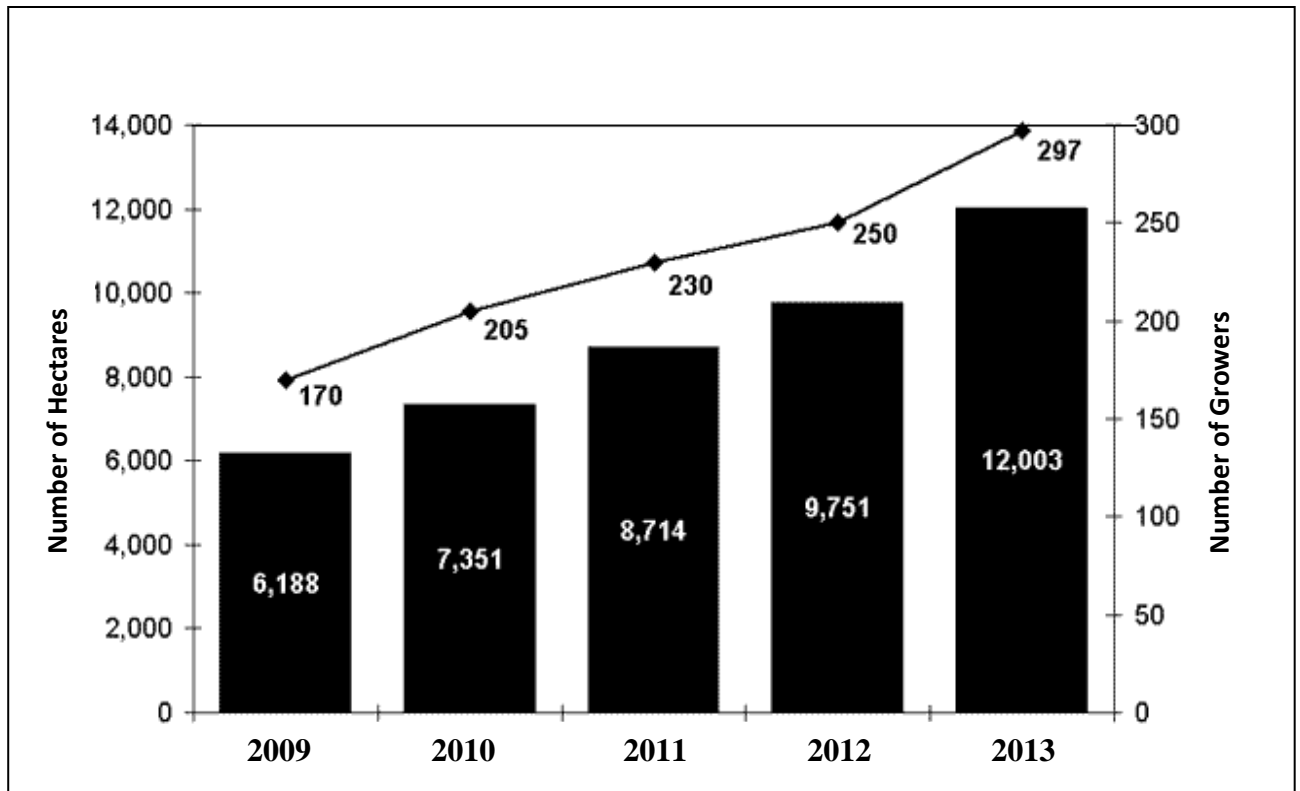
Any valid answer and a description of its use (3)

Describe **one** method you would use to **organically** control diseases such as rusts and moulds.

Remove dead plant material or old mulches / space plants / prune to allow air

circulation / resistant varieties Any valid (3)

- (d) The chart below shows an increase in certain organic production over a number of years.



Suggest **two** reasons why producers are moving to organic production.

Better pricing / increased demand / speciality markets / local demand / increased profits / healthier any two valid (2 + 2)

What benefits does organic production have for the consumer?

More nutrients / better taste / no chemical residues / healthier options

Any two valid (2 + 2)

How can you tell that products labelled as organic are really organic?

Certification labels / Department of Agriculture or IOFGA or EU or non-EU organic licence numbers or logos / they go off faster any valid (2)

Name the state organisation that assists the producers of flowers, fruit and vegetables.

Bord Bia [Accept An Bord Glas] (2)

5. FORESTRY

(a) The number of rings you can see in a cut tree trunk indicates The age of the tree (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
1 Evergreen	a Collection of trees	1 + c
2 Beaufort	b Dries timber	2 + d (2)
3 Arboretum	c Waxy leaf	3 + a (2)
4 Kiln	d Scale to measure wind	4 + b (2)

(c) Identify the trees A, B and C from the photographs below.



A



B



C

A. Larch (1) B. Sycamore (1) C. Oak (1)

Trees are planted for a variety of reasons.

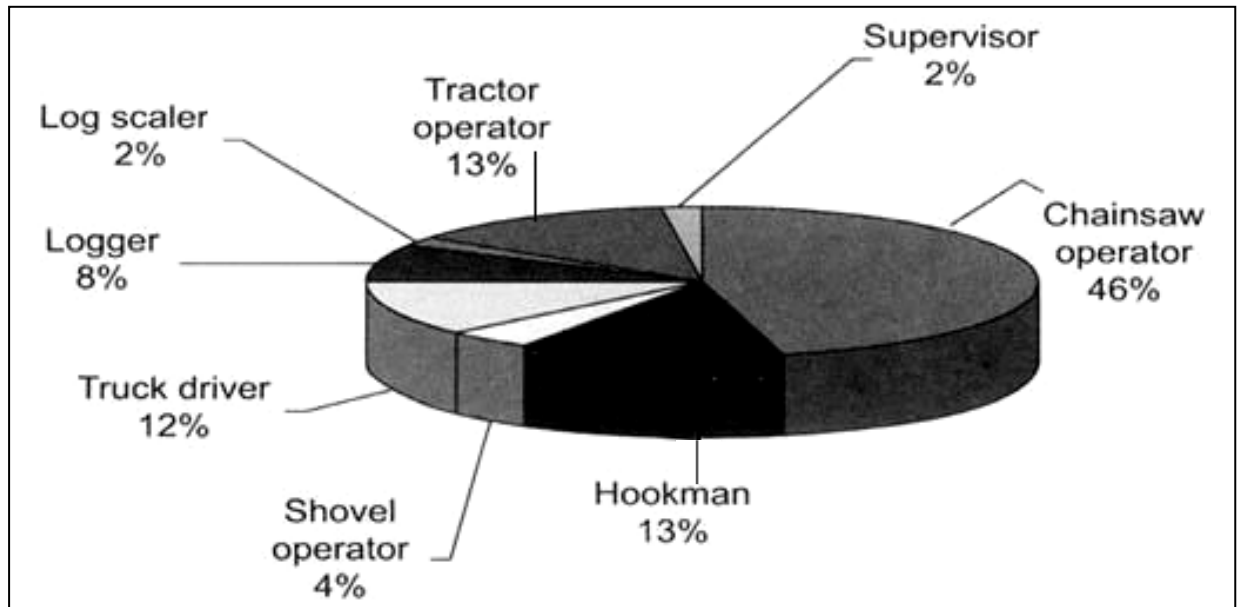
Describe **two** effects that a large plantation would have on its locality.

Source of employment / recreation / shelter / more habitats or more plants or more

animals / unsightly / fewer habitats or fewer plants or fewer animals / greater traffic /

road development / reduced water table Any two valid (3 + 3)

- (d) As part of your study of this module you studied safety and safety equipment. The chart below shows various jobs in forestry and the percentage of accidents associated with each job.



Identify the most dangerous job in forestry.

Chainsaw operator (2)

Which forestry jobs have the lowest accident rate?

Supervisor and log scaler (1 + 1)

The 'hookman' in forestry has the job of placing a strap around a felled log and attaching it to the hook of a machine for pulling logs.

Name **two** items of safety equipment a 'hookman' should wear.

1. Hard hat / high visibility vest or jacket / steel capped boots Any two valid items (2 + 2)

Describe **two** steps management should take to reduce the number of accidents in the forestry industry.

Training / equipment checks / well maintained equipment / good work site organisation

/ clear communications any two valid (2 + 2)

6. GRASS

(a) A common variety of grass found in Irish pastures is Ryegrass or any valid (3)

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

- Grasses are insect pollinated (2) True ☐ False ☒
- The grass flower head is known as a spikelet (2) True ☒ False ☐
- 'Roundup' is the most effective grassland weed killer (2) True ☐ False ☒

(c) The photograph shows a machine used in the 'topping' of grass.



Explain why grass is 'topped'.

Promotes leafy growth / promotes tillering or thickens grass / controls some weeds

Any two valid (2 + 1)

At what time of year **and** stage of growth should topping of grass occur?

Time of year: May to August (2)

Stage of growth: When grass starts to produce seeds / at a height of 5 cm any valid (1)

Give **two** precautions you would take when using the topping machine.

Cover the PTO / close cab windows to protect from flying stones /

keep machine well maintained / clean only when tractor turned off

} (3)

(d) Every year farmers use a variety of additives to improve their silage.

Name **two** commonly used silage additives.

Formic acid / molasses / lactic acid-producing bacteria (4)

Describe a laboratory experiment to investigate **one** of the named silage additives.
Use the following headings as a guide:

Equipment used.

Container / lid / (freshly cut) grass / additive / one other valid item any four (1+1+1+1)

Stages in the experiment.

1. Divide the grass sample into two equal portions (1)

2. Add the additive to one portion of grass, leave the other portion without the additive (1)

3. Compact the grass in each container (1)

4. Label both containers / seal both containers / leave at room temperature any one (1)

7. MILK AND MEAT PRODUCTION

- (a) Grass tetany is a condition which is caused by low levels of the mineral Magnesium (1)
- (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
1 Dual purpose	a Nutritive organ	1 + d
2 Oestrus	b Pregnancy	2 + c (2)
3 Placenta	c 'In heat'	3 + a (2)
4 Gestation	d Milk and meat	4 + b (2)

- (c) The photographs show three different feedstuffs given to milk-producing and meat-producing animals.



Pellets



Silage



Hay

Give **one** advantage and **one** disadvantage of **each** type of feedstuff.

Pellets

Advantage: Can supplement protein and minerals in the diet / suit automated systems

Disadvantage: Expensive / may cause dietary issues if over used / storage or handling required Any valid in each case (2, 1)

Silage

Advantage: Good feeding value / not as weather dependent as hay / slow to spoil / flexible use

Disadvantage: Initial investment high / effluent issues / labour intensive / digestive issues (2, 1)

Hay

Advantage: Low production costs / digestible by many animals / good feeding value

Disadvantage: Can be low in proteins and sugars / storage problems / good weather essential

(2, 1)

(d) The photograph shows a newly-born calf and its mother.



Give **one** indication that an animal is about to give birth.

Cow is restless / pin bone soft / isolates herself from other cows / teats may harden

Any valid (5)

Outline **two** things you would do to prepare the area in which the animal will give birth.

Clean, wash, disinfect shed / clean straw or bedding / fresh water / foot bath

Any valid (3)

In what circumstances would you need to use a calving 'jack'?

When the cow is too exhausted to push / calf is big / calf is distressed /

rapid birth is required for other medical reasons (3)

Suggest **two** things you would do to make sure the newborn animal thrives.

Clean and dry the calf / disinfect the navel / feed with colostrum / ensure the calf is

warm / ensure bedding is clean / check regularly over the first 12 hours (3)

