

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

**Leaving Certificate Applied 2012**

**Marking Scheme**

**Agriculture and Horticulture**

**Common Level**



**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).**

**Each part consists of two questions. Within each part marks are allocated on the basis of 7 marks for a first correct answer and 3 marks for the second correct answer.**

1. (a) Name the plant structure shown in the photograph.

Bulb (not name of plant only)

Name a plant that reproduces by means of this structure.

Daffodil/ onion/ tulip/ any valid answer.



- (b) State **one** function of a plant stem.

Support/ transport

What are root hairs for in a plant?

Absorbing / taking in water and minerals or named mineral

- (c) Perlite or vermiculite is added to potting compost to

Help retain water/ aeration/ absorbs and-or releases nutrients/ insulation

Why is sand or grit added to potting compost?

Improve drainage/ aeration.

- (d) The **three** main nutrient elements in a fertiliser are Nitrogen (N), Potassium (K) and

Phosphorus or P

A fertiliser used for tomatoes and fruit is rich in the element

Potassium or potash

- (e) The twig in the photograph is from which type of common Irish tree?

Ash

A piece of sporting equipment made from the timber of this tree is

Hurley



(f) The term 'oestrus' in an animal refers to

Period when pregnancy can occur/ ovulation/ in heat/ bulling

What is meant by the initials 'A.I.'?

Artificial Insemination

(g) Cheese is most often made from the milk of cows **and**

Goats or sheep

When making cheese, the enzyme rennin is used to

Form curds/ curdle/ thicken the milk

(h) Name the part of the milking machine shown in the photograph.

Cluster

How does a milking machine work?

Suction/ vacuum/ pressure



(i) **Two** hazards to be aware of when harvesting cereal crops are

1. any relevant hazard.

2. any relevant hazard

(j) The Irish Organic Farmers and Growers Association (IOFGA) is an organisation involved with Agriculture and Horticulture in Ireland.

State **two** ways in which this organisation helps the Agriculture/Horticulture industry.

1. Certification/ advice/ information/ promotes organic food/ policy development/ training

2. as above

(k) Name **one** course in Agriculture/Horticulture available to students after their Leaving Certificate.

e.g. landscaping/ design/ green keeping/ FETAC courses/ any relevant answer.

Name **one** skill you would develop during this course.

Any relevant skill that matches the named course.

(l) State **two** features that should be included in a garden designed for wheelchair users.

1. Raised beds/ narrow beds/ wide level paths/ solid path material/ any relevant answer

2. Space for turning/ ramps/ non-slip path material/ any relevant answer

(m) Give **two** reasons why fruit and/or vegetables should form part of a healthy diet.

1. e.g. vitamins/ minerals/ fibre/ low in fat or low in calories.

2. Any two relevant answers

**OR**

Give **two** factors to be considered when making a flower arrangement.

1. e.g. use available plants/ use suitable plants/ cost/ colour/ scent/ texture/

2. proportion. Any two relevant answers

(n) The warning symbol in the picture means

Corrosive

Name a precaution you would take with such a substance.

Gloves/ goggles/ mask/ protective clothing



(o) Give **two** reasons why silage making is more popular than hay making as a way of conserving grass.

1. better feeding value/ not as weather dependent/ better preservation qualities

2. faster/ less labour intensive/ easier to store/ any other valid point

(p) State **two** uses for forestry timber grown in Ireland.

1. e.g. construction/ furniture/ pallets/ logs/ pulp/ biomass/ fuel

2. as above/ any other valid answer

(q) The proper name for weedkillers is

Herbicides

Weedkillers that kill **all** parts of a plant are called

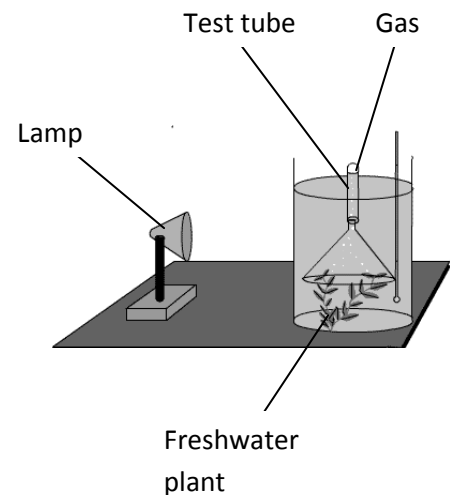
Systemic/ non-selective/ multipurpose

(r) Name the freshwater plant usually used in the experiment shown in the picture.

Elodea/ pond weed.

What gas is being collected in the test tube?

Oxygen



**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) During the night plants respire and release the gas Carbon dioxide. (3 marks)

(b) Write each term from column C in column B to match a term from column A.  
**See shaded example.**

Column A	Column B	Column C
<b>Humus</b>	Improves soil fertility	<b>Help soil drainage</b>
<b>Clay particles</b>	<i>Smallest soil particle (2 marks)</i>	<b>Slow soil drainage</b>
<b>Sand particles</b>	<i>Help soil drainage (2 marks)</i>	<b>Improves soil fertility</b>
<b>Silt particles</b>	<i>Slow soil drainage (2 marks)</i>	<b>Smallest soil particle</b>

(c) Garden tools are expensive and should be properly cared for.  
Describe what you would do to properly maintain the following parts of garden tools before storing the tools for the winter:

The wooden handle of a spade or shovel.

Wash/ dry/ smooth with sandpaper/ treat with (boiled linseed) oil [allow varnish]

One point = 3 marks

The metal part of a spade or shovel.

Wash or remove soil/ dry/ lightly oil/ treat rust/ sharpen using a file [allow paint]

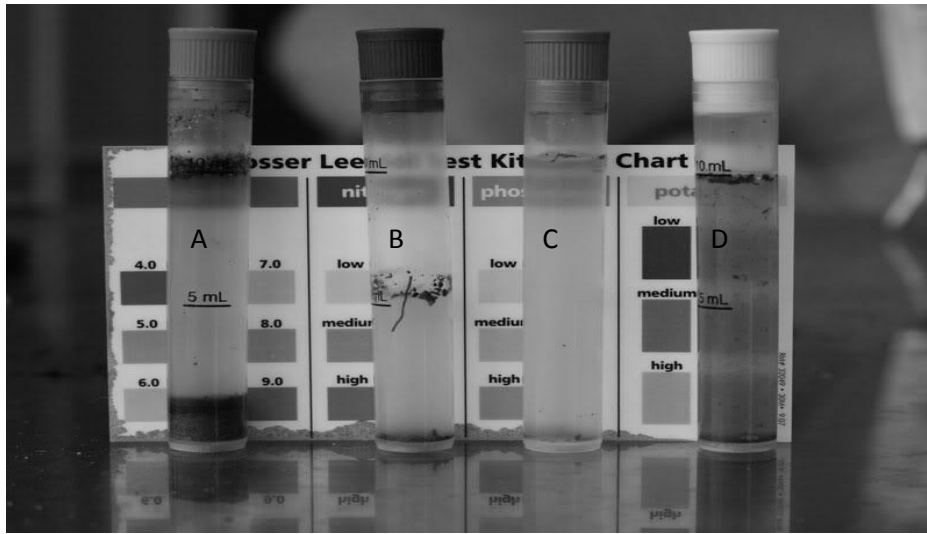
One point = 3 marks

The cutting blade of a secateurs or lopper.

Clean (with oil or white spirit)/ oil/ sharpen (with oil stone)

One point = 3 marks

(d) The photograph and table below show the results of soil tests on some garden soil.



	Green tube (A)	Red tube (B)	Blue tube (C)	Yellow tube (D)
<b>Test</b>	pH	Nitrogen	Phosphorus	Potassium
<b>Result</b>	7.0	Low	Low	Medium

How would you increase nitrogen levels in this garden, in the short term **and** in the long term?

Short term. Use a high nitrogen fertiliser [allow add fertilizer]

Long term. urea or ammonia-based fertilizers/ compost/ farm yard manure/

sow clover or any N-fixing crop/ crop rotation (2 + 2 marks)

What would you add to the soil to **increase** the pH above 7.0? Lime (2 marks)

Name a plant that would **then** grow well in this soil. Cabbage/ carrots/ any relevant crop (2 marks)  
[do not allow acidophilic plants]

The results in the table above show that the nitrogen levels and phosphorus levels in the soil are not ideal for plant growth.

What part of a plant grows **best** with ideal nitrogen levels in the soil?

Leaves/ shoots (2 marks)

What part of a plant grows **best** with ideal phosphorus levels in the soil?

Roots (2 marks)



### 3. GARDEN DESIGN

(a) An example of an ornamental tree grown for its dark red leaves is the

copper beech/ copper maple/ any valid answer (3 marks)

(b) State whether the following statements are true or false, by ticking  the correct box.

- ‘Damping off’ is caused by a fungus. (2 Marks) True  False
- ‘Japanese’ is a garden style. (2 Marks) True  False
- A garden trellis is made from wood only. (2 Marks) True  False

(c) Briefly explain the meaning of each of the following terms used in garden design.

Aspect.

Direction your house or garden faces/ where the sun shines in your garden.

(One point = 3 marks) Key words are direction/ sun.

Hard landscape feature.

Any garden feature made from brick, gravel, stone, concrete, metal, glass, wood, plastic

answer to include two of the above OR one and a valid example. (One point = 3 marks)

Perennial border.

Plants that grow back every year/ soft/ non woody/ colourful/ closely planted together/

large scale/ shaped flower bed - any one (One point = 3 marks)

(d) The photographs below show some of the stages in planting a lawn.



**A**



**B**



**C**



**D**

Rearrange the letters to show the correct sequence of these stages in planting a lawn.

B, D, A, C or B, A, D, C (2 marks)

In relation to each of the above stages, write a brief note of advice to a person who is planting a lawn for the first time.

Stage letter B: Kill all weeds before digging/ dig the soil well or rotavate/ remove all weeds and large stones/ break up soil well/ allow soil to rest for a while before moving to the next stage/Sept or April any one valid point (2 marks)

Stage letter D: Rake the soil well / removing any stones (leaving a fine soil finish)/ remove any humps or hollows/ level area for planting any one valid point (2 marks)

Stage letter A: Add fertiliser/ sow seed any one valid point (2 marks)

Stage letter C: Roll the lawn area/ firm seed into the soil/ water well with a fine spray/ protect from birds/ fertilise any one valid point (2 marks)

What other stage of preparation might be required in the planting of a lawn?

Selecting seed mixture/ killing weeds, levelling, fertilising, creating border or edging or add soil / or watering or any point not mentioned above. (2 marks)

## 4. FLORISTRY, FRUIT & VEGETABLES.

(a) In growing flowers, fruit and vegetables a common pest is

Slugs/ aphids/ any valid answer (3 marks)

(b) Complete the following sentences on the lines below using the most suitable words from the list.

**Blowtorch      Chemicals      Fleece      Pesticides      Lights      Herbicide**

- Organic production is production without the use of

Chemicals or pesticides or herbicides (2 marks)

- An organic way of controlling weeds is by using Blowtorch (2 marks)

- An organic way of keeping pests from a crop is by using Fleece (2 marks)

(c) The photographs below show structures used to make the growing season longer. Identify these structures and give **one** advantage **and one** disadvantage of **each**.



**A**



**B**



**C**

Name of A. Greenhouse/ glasshouse. (1 mark)

Advantage. protection/ control temp/ control humidity/ control light/ reduces disease and pests/ good ventilation/ extends growing season (1 mark)

Disadvantage. expensive to erect/ repair/ easily damaged/ can get very hot/ broken glass hazard no rain falls/ windows must be cleaned (1 mark)

Name of B. cloche/ low tunnel. (1 mark)

Advantage. protection from harsh weather/ protection from pests/ increased temperature/ longer season/ cheaper/ moveable/ reduced space 1 (mark)

Disadvantage. access/ may overheat plants/ prone to weather damage/ reduced space (1 mark)

Name of C. (Poly) tunnel. (1 mark)

Advantage. as per A above but more versatile/ cheaper to erect & repair/ larger/ mobile.(1mark)

Disadvantage. cover easily damaged/ harder to heat or insulate/ less light/ limited life span/ poor ventilation/ more watering (1 mark)

- (d) Write a brief comment on **each** of the following statements in relation to a **named** flower **or** fruit **or** vegetable.

Name of flower **or** fruit **or** vegetable. any valid name, no marks, required to validate next parts

Statement 1. "Local product means longer shelf life".

Comment.

Any point which recognises that local produce is fresher and will last longer

(3 marks)

Statement 2. "Direct-to-public selling".

Comment.

Any point made about the value of a producer selling directly to the consumer in

terms of price for one or both parties (3 marks)

Statement 3. "Use of wholesalers".

Comment.

Any point that recognises the role of wholesalers in terms of access to a larger

market, advertising etc as positive aspects but negative aspects in terms of price for goods,

demands in terms of volume, below cost selling etc. (3 marks)

Statement 4. "Novelty factor in selling".

Comment.

An unusual method of selling in terms of colour, variety, packaging etc. can have what

is termed a novelty factor in that it is different and can attract interest and purchasers

(3 marks)

## 5. FORESTRY

(a) The organisation responsible for forestry development in Ireland is Coillte. (3 marks)

(b) Match each plant type in column A with the correct definition in column B to give an answer in column C. See shaded example.

Column A	Column B	Column C
1 Shrub	a A tree that does not lose its leaves in winter	1 + c
2 Deciduous tree	b A tree that is cone-bearing	2 + d (2)
3 Coniferous tree	c Is smaller than a tree and has several main stems	3 + b (2)
4 Evergreen tree	d A tree that loses all its leaves in winter	4 + a (2)

(c) The photograph shows a section through a tree trunk.  
The age of the tree can be estimated from the photograph.



How can you tell the age of the tree? (growth) rings. (3 marks)

What age was this tree? 14 - 18 years. (3 marks)

Describe how you and a classmate would use a measuring tape and a small stick to measure the **height** of a tree.

Standing away from the tree/ line the stick up with the tree or place the lower end of the stick in line with the bottom of the tree/ move towards or away from the tree until the stick is in line with the full height of the tree or mark on the stick the top of the tree/ turn the stick through 90 degrees (or sideways / your classmate notes the place on the ground that matches the point on the stick where the top of the tree was marked/ measure the distance from the base of the tree to this point.

Any three points that show understanding of the method (1 + 1 + 1 = 3 marks)

(d) It is important to locate forests in suitable areas.  
Give **two** main features of an ideal forestry location.

1. Complement other farm enterprises/ land is fertile and can support a commercial crop/ ease of access, slope of land etc. is suitable/ location is suitable in terms of population and environment.

2. any valid points (2 + 1 = 3 marks)

How might the development of forestry affect local rivers and streams?

1. run off from the forestry activities, debris, sedimentation, pollution, reduction in fish life, reduction in water levels, acidification.

2. any valid points (2 + 1 = 3 marks)

How might the development of forestry affect local wildlife?

1. alteration of habitat/ reduction or increase of species/ loss of food chain/ creation of shelter/ reduction in human activity.

2. any valid positive or negative point (One point = 3 marks)

How might the development of forestry affect leisure pursuits in the area?

1. access to uplands/ less water in rivers/ impact on fisheries/ creation of new areas for leisure/ forest walks/ hunting etc.

2. any valid point (One point = 3 marks)

## 6. GRASS

(a) The purpose of 'topping' grassland is to encourage new (leafy) growth/ thicken the grass/ tillering/ suppress weeds (3 marks)

(b) State whether the following statements are true or false, by ticking  the correct box.

- Clover is a weed of grassland. (2) True  False
- Italian ryegrass is good for silage production. (2) True  False
- A grass flower is called a spikelet. (2) True  False

(c) The photographs show bales of silage and bales of hay.



At what stage of growth should grass be cut for conservation as silage?

When it has the greatest amount of leaf/ just before seeds appear/ in June/ when grass is long (high)/ at about 4 weeks growth (3 marks)

At what stage of growth should grass be cut for conservation as hay?

Before seed heads ripen/ when sugars high. (3 marks)

More grass is conserved as silage than as hay. Suggest **two** reasons for this.

1. Silage is not as weather dependent/ more feeding value/ greater yield in a season/ stores better.

2. Any 2 valid points (2 + 1=3 marks)

(d) The photograph shows grassland with a lot of weeds.



Describe how you would carry out an experiment to compare **two** different weedkillers.

Mark off 3 separate plots [allow 2]/ in the same location/ same size/ equal concentration of weedkiller/ equal amount /applied to each area/ wait / record results.

Any valid points (1 + 1 + 1 = 3 marks)

What steps would you take to make sure the experiment is a fair test?

Equal area/ equal amount/ equal concentration of weedkillers  
same type weedkillers/ same sprayer/ same pressure/ same weather conditions

any valid points (2 + 1 = 3 marks)

What would be the best time of the year to use a weedkiller to control weeds in grassland?

Spring-summer or when weeds are actively growing.

any valid answer (3 marks)

Using a fertiliser in the days before applying a weedkiller improves the action of the weedkiller. Suggest a reason why.

The fertiliser promotes growth and the weeds absorb more of the chemical

any valid answer (2 + 1 = 3 marks)



## 7. MILK AND MEAT PRODUCTION

(a) Grass tetany occurs in animals due to a lack of the mineral Magnesium (3 marks)

(b) Match each term 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 Dual purpose</b>	<b>a Fungus</b>	<b>1 + d</b>
<b>2 Liver fluke</b>	<b>b Diarrhoea</b>	2 + c (2)
<b>3 Scours</b>	<b>c Parasite</b>	3 + b (2)
<b>4 Ringworm</b>	<b>d Milk and meat</b>	4 + a (2)

(c) The abattoir is the place where animals are slaughtered and meat products are prepared for delivery to butcher shops.

What is meant by 'traceability' in terms of meat production?

Any meat sold can be traced back to the farm where it is produced (3 marks)

What is the reason for 'hanging' meat?

Properly hung meat is more tender or has more flavour. (3 marks)

What is animal offal **and** how is it safely disposed of?

Offal. Waste material left after an animal is slaughtered or an example - bones/ guts/ liver

Disposal. rendered/ alternative use named e.g. animal food, human food/ incinerated

any 2 valid points (2 + 1=3 marks)

(d) The photograph shows a modern animal house.



Identify **two** features of this type of housing design which help reduce the spread of disease.

1. *ease of feeding/ bright/ well ventilated/ spacious/ clean/ sheltered/ waste stored in tank/ pens*
2. *any two relevant points (2 + 1 = 3 marks)*

Give **two** ways in which this type of housing design improves farm efficiency.

1. *allows for automation/ centralised feeding/ reduces labour requirements/ healthier animals/ increased productivity.*
2. *any two relevant points (2 + 1 = 3 marks)*

What is the most modern method of storing animal effluent?

*Over ground (silo) or underground (slurry) tank (3 marks)*

Describe how animal effluent is disposed of in an environmentally friendly way.

*Anaerobic or aerobic digestion/ slurry tanks equipped with a 'trailing shoe' or 'injector' system = system where slurry is put directly into the ground.*

*any valid answer (3 marks)*



