



Coimisiún na Scrúduithe Stáit
State Examinations Commission

LEAVING CERTIFICATE 2008

MARKING SCHEME

AGRICULTURAL SCIENCE

ORDINARY LEVEL



Coimisiún na Scrúduithe Stáit
State Examinations Commission

LEAVING CERTIFICATE 2008

MARKING SCHEME

AGRICULTURAL SCIENCE

ORDINARY LEVEL

**Leaving Certificate
Agricultural Science – Ordinary Level
Marking Scheme 2008 (M39)**

Section One

Question 1.

- (a) an organism or animal or plant/ that lives on or in a host or another animal or another plant/ to the detriment of or feeds off that host. 4 + 2
- (b) (i) tick/ louse/ named bacterium or bacterial disease/ named virus or viral disease/ liver fluke/ etc. 4
- (ii) matching host 2
- (c) ectoparasites live **on** the surface or on the outside of the host 2
- endoparasites live **inside** the host 2
- (d) blight/ leaf roll/ smut/ powdery mildew/ aphids/ wireworms/ eelworms/ etc. 4

Question 2.

- (a) A = testa 2
- B = endosperm 2
- C = embryo plant 2
- (b) food store or any named food 4
- (c) growth of (embryo) plant/ growth of seed/ sprouting 4
- (d) water(moisture)/ oxygen(air)/ suitable temperature(heat) 3(2)

Question 3.

- (a) 10:10:20/ 18:6:12/ 27:2.5:5/ etc. or named eg. Cutsward 4
- (b) compound fertiliser a mixture of two or more elements or a mix of straight fertilisers/ straight fertiliser contains one nutrient element 4
- (c) for balance of nutrients for crop plant/ reduces labour/ Reduce travelling on land/ cheaper 4
- (d) farmyard manure/ slurry/ seaweed/ animal manure/limestone 2 (2)
- (e) cheap/ plentiful/ adds organic matter/ adds mineral nutrients/ etc. 4

Question 4.

5(4)

Farming Practice	Machine required
Turning hay	Tedder
Harvesting potatoes	Elevator digger
Cutting silage	Mower
Smoothing and firming seed bed	Roller
Turning sod of earth	Plough

Question 5.

- (a) A= larva (caterpillar) B = pupa (chrysalis)/cocoon 2(2)
- (b) metamorphosis 4
- (c) larva (A) 4
- (d) leaves are eaten/chew plant/feeds on/kills plant 4
- (e) wireworm(clickbeetle)/ leatherjacket(cranefly/ etc. 2(2)

Question 6.

5(4)

Plant Process	Plant structure
(Support of plant)	(root)
Transport of water	xylem
Vegetative propagation	potato tuber
Pollination	flower
Photosynthesis	chloroplast
Gaseous Exchange	stoma

Question 7.

- (a) B 4
- (b) water has passed through faster/ more water has passed through 4
- (c) A 4
- (d) holds more water/ contains more nutrients/ better ion exchange/ less leaching 2(2)
- (e) good drainage/ good aeration/warm/easier to till etc. 4

Section Two**Question 8**

- (a) isolate cow/ assistance or vet/ using a jack if cow in trouble/ cutting cord/ cleaning out airways/ choice of bull/ diet of cow/ supervision/good hygiene etc. 3(3) + 6
- (b) laxative / provides nutrients/ provides antibodies/ disease prevention/warm them up/ Easily digested/ high in protein 3 + 6
- (c) dehorning/ castration/ dosing/ 'hardening off' / weaning/ creep feeding 3 + 6
- (d) clean bedding/ ventilation/ individual pens/ straw available/ water available/ draught free/ hygienic conditions/ suitable temperature 2(3) + 6
- (e) traceability for the farmer or for mart or for butcher or for consumer/ legal requirement 3
- (f) not allowing calves to drink too much/ avoiding a milk ball/ hygiene when feeding/ clean housing/ to prevent bacterial scour/ 2(3)
milk ball treated by feeding water or a fluid replacement solution/
bacterial scour treated by antibiotic/ stop feeding milk 6

Question 9

- (a) weather may delay cultivation/ may delay sowing/ spring variety not frost resistant/ shorter growing season/ lower yields/ possibility of drought in summer 6 + 3
- (b) longer growing season/ higher yields/ can be harvested in good weather/ farmer has less labour load in spring/ is not under as much pressure in the autumn months when cereals are planted 6 + 3
- (c) free of weed seeds/ high purity/ high germination rate/ free of wild oat seed/ Treated for disease/ true to type 6 + 2(3)
- (d) wireworm/ leatherjacket/ aphid/slugs/ snail/bird/rabbit/rodents 6
wireworm/ leatherjacket – damages root
or aphid/slugs/ snail – eat leaves or stem/ vector of disease 3
how controlled 3

- | | | |
|-----|---|-----------------|
| (e) | grain drying to 20%/ acid sprayed on grain/ dry house/ sealed from rodents/
well ventilated/ fumigation/ hygiene | 6 + 2(3) |
| (f) | name of crop | 3 |
| | barley; 5-8 tonnes per hectare | |
| | wheat; 5-9 tonnes per hectare | |
| | oats; 3-8 tonnes per hectare | 3 |

Question 10. any two parts **(30, 30)**

- | | | |
|-----|--|--------------------|
| (a) | | 6(3) + 2(6) |
| | (i) provides calcium(minerals)/ raises pH level/ helps structure(flocculation)/ helps bonding of clay to minerals/ encourages earthworm activity/ better drainage/ kills fluke eggs/ increases yield | |
| | (ii) breaks cycle of pests/ or of diseases/ replaces nutrients/ weed control/ Increases yield/ recovery or rest | |
| | (iii) levels soil/ pushes down stones/ improves seed-soil contact/ better germination/ may control slugs/ brings up water | |
| | (iv) controls weeds/ better growth of grass/ better yield of grass | |
| (b) | | 6(3) + 2(6) |
| | (i) raised bogs originate in lakes or hollows or river valleys OR raised bogs found in central Ireland/ blanket bogs build up under high rainfall conditions OR blanket bogs typical of mountains on west coast/ covers landscape | |
| | (ii) paddock grazing – paddocks or enclosed fields/ animals graze for a set time (one day)/ moved to next paddock/ rotational grazing/ most efficient / fertilizer spread after grazing/ permanent fences/ roadway
strip grazing - movable electric fence/ animals given fresh strip each day/
movable water supply/ back fence to allow last grazed area to be fertilised and recover/ varied in size | |
| | (iii) hay – grass allowed grow longer than for silage/ grass is dried/ to prevent rot or bacteria / dependent on dry weather/ better for young animals/ horses/ sheep/ easier to transport(sell)/ variety of grass
silage - bacteria/ fermenting grass/ preserving grass by lowering pH/ can be in pit or baled/ example of additive or stimulant/ more independent of the weather cut at leafy stage(earlier)/ higher DMD(feeding value) | |
| | (iv) tillering – growth of shoots at base of grass or cereal plant/ thickening
tilling – cultivation of soil for crop growth/ example eg. Ploughing etc. | |
| (c) | | 6(3) + 2(6) |
| | (i) sheep graze closer to cow pats/ use grass that would not be used/ encourages tillering/ excrement of both improves pasture quality/ better increase in daily liveweight gain/ less parasites | |
| | (ii) keeps out water/ keeps air out or causes anaerobic conditions/ suitable for right bacteria/ absorbs heat/ helps fermentation | |
| | (iii) fixes nitrogen/ produces good yields/ of high quality grass/ without nitrogen fertiliser/ helps in making herbage rich in protein/ reduces costs/ increases palatability/ weed control(ground cover)/ higher in N/ organic farming | |
| | (iv) prevent fly strike/ sale of fleece/ prevents overheating/ preparation for housing/ more space in house/ improve weight gain | |

Question 11

- (a) **3(3 + 3)**
 barley or oats / for carbohydrate and fibre/ for energy
 soya bean/ for protein/ for growth
 oil / for energy
 corn and maize/ for carbohydrate and fibre/ for energy
 molasses/ for sugars/ for energy/ palatability
 beet pulp/ fibre or energy
 vitamins/ normal growth or health
- (b) **6 + 3(3)**
 adequate fertilising/ applying P and K in autumn/ applying N in spring/ timing of cutting
 / if too early DMD not high OR if too late DMD will be low/ degree of chopping/ wilted
 or not/ rolled or not/ type of grass/ Italian ryegrass needs reseeding after 2-3 years OR
 using grass species such as cocksfoot and meadow grasses will result in lower palatability
 or lower productivity/ combination of perennial ryegrass with clover and Italian is best
 option/ proper storage in a pit with all sides sealed/ use of additives/ keeping anaerobic
 conditions at all times/ weather conditions/ closing off time
- (c) suckling/ colostrum to milk/ good quality grazing or creep feeding/ concentrates/ lick
 provided/ example CalMag **6 + 3**
- (d) name of disease **3**
 how it affects animal **3**
 any other relevant point **3**
- hypocalcaemia/ lack of calcium or blood calcium lowered due to lactation/
 spasmodic leg movements or inability to stand up/ coma and death if not treated
 - grass tetany/ lack of magnesium or cows on lush heavily fertilised grass low in
 magnesium/ muscle tremors or twitching eyeballs or coma and death
 - cobalt deficiency/ lack of thrive in sheep
 - iron in piglet/ anaemia/ injection
- (e) introducing bacteria or micro-organisms or gut flora/ to rumen and reticulum
6 + 3

Question 12.

- (a) diagram **6,3,0**
 labels (nucleus, cell wall, cytoplasm) **3(1)**
- (b) nucleus **3**
 genetic code/ inheritance/ carries genes **3**
- (c) gamete – sex cell/ reproductive cell/ haploid cell/ egg or sperm **3**
 haploid – half of diploid/ n/ no of chromosomes in gamete **3**
 mutation – change in DNA or in genetic code **3**
- (d) **12(3)**
- (i) The genotypes of the original parents (RR) X (rr)
 The gametes produced by each parent (R) X (r)
 The genotype of the offspring (Rr)
 The phenotype of the offspring Red
- (ii) The genotype of the second generation parents (Rr) X (rr)
 The gametes produced by each parent (R)(r) X (r)
 The genotypes of the second generation (Rr) (rr)
 The phenotypes of the second generation Red White

Question 13

- (a) (i) name of enzyme: amylase/ sucrase/ lactase/ lipase/ protease/ trypsinogen/peptidase **3**
name of matching substrate: carbohydrate/ starch/ sucrose/ lactose/ fat or lipid/ protein **3**
- (ii) 1. gall bladder **3**
2. emulsifies fat or breaks fat down into droplets **3**
3. fatty acids and glycerol **3**
- (iii) breaks down red blood cells/ regulates temperature/ breaks down toxins or example/
stores glycogen/ produces bile/ stores minerals/ stores vitamins/ breaks down excess
protein/ makes urea **(6 + 2(3))**
- (iv) small intestine or ileum **3**
- (b) (i) A= oesophagous(food tube) B= stomach C = liver D = pancreas E = small intestine
F = large intestine(colon) **6(2)**
- (ii) S = oesophagous T = rumen U = omasum V = abomasum W = small intestine
X = anus **6(2)**
- (iii) pig does not have ruminant system/ does not have a named part of ruminant system/
ruminant regurgitates food/ food is stored in rumen/ single(simple) stomach
(monogastric)/ different dentition **2(3)**

