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AGRICULTURE **0600/11**

Paper 1 Theory **October/November 2025**

MARK SCHEME

Maximum Mark: 100

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

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GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Science-Specific Marking Principles

1	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane / ethene, glucagon / glycogen, refraction / reflection).
4	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5	<u>'List rule' guidance</u> For questions that require **n** responses (e.g. State **two** reasons …): • The response should be read as continuous prose, even when numbered answer spaces are provided. • Any response marked ignore in the mark scheme should not count towards **n**. • Incorrect responses should not be awarded credit but will still count towards **n**. • Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should **not** be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response. • Non-contradictory responses after the first **n** responses may be ignored even if they include incorrect science.

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6 Calculation specific guidance

Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states 'show your working'.

For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values.

For answers given in standard form (e.g. $a \times 10^n$) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme.

Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this general principle will be noted in the mark scheme.

7 Guidance for chemical equations

Multiples / fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme.

State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

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Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standard isation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	correct point or mark awarded
	incorrect point or mark not awarded
	benefit of the doubt given
	error carried forward applied
	point has been noted, but no credit has been given or blank page seen
	response is too vague or there is insufficient detail in response
	incomplete answer
	linked consideration of points
	linked consideration of points

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Annotation	Meaning
REP	repetition in response
^	information missing or insufficient for credit
CON	contradiction in response, mark not awarded

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Question	Answer	Marks
1(a)	stunted growth / decreased growth rates / lack of vigour; takes nutrients / loss of sap; plant loses water / plant wilts; disturbs translocation / transport / damages (vascular) tissues / vessels; interrupts transpiration; toxicity / toxic saliva; transmit diseases / viruses / blight / spreads fungus; create / wounds / entry point for pathogens; coat with 'honeydew' / reduced fungicide effectiveness; reduced photosynthesis; mottled leaves / browning / yellowing; curled leaves; low yield / poor fruit formation; death;	**3**
1(b)(i)	One mark for a correct example: for example, ladybird and aphid / cat and rat / duck and locust / sterile males;	**1**
1(b)(ii)	control using a natural enemy / predator; which feeds on / destroys pest / kills pest; eliminates pest problem / reduces pest population; Credit descriptions of other forms of biological control.	**2**
1(b)(iii)	the biological control agent becomes a pest itself / eats the crop; the biological control agent damages the crop, e.g. by trampling; potential disease transfer; not all pests are killed / removed; can be slower / less efficient than other methods; unintended damage to the environment / other species; lack of availability of the control agent; the pest evolves and is no longer controllable; the need to reintroduce the predator / need to keep control agent numbers high;	**2**

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Question	Answer	Marks
2(a)	to show dominance / capital letter (E) shows dominant allele; lowercase letter (e) indicates recessive;	**2**
2(b)	(a homozygous dominant goat) upright ears; (a heterozygous goat) upright ears; (a homozygous recessive goat) lop ears / not upright ears;	**3**
2(c)	parent gametes: E e x e e; offspring genotypes: Ee Ee ee ee; phenotype ratio: 1:1 / 2:2;	**3**

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Question	Answer	Marks
3(a)	For example: isolation of sick animals: separates healthy and diseased animals / allows treatment of diseased animals / stops disease spreading from animal to animal / reduces transfer of infectious agent (microorganisms / oral secretions / lesions / spores) by minimising animal contact / licking / rubbing; maintaining good hygiene: reduces spread by ingestion by ensuring clean food / water / receptacles / place / removal of vectors / disinfectants kill pathogens / clean bedding which does not host pests / diseases / prevents disease organisms, e.g. bacteria breeding / reproducing / increasing / removes reservoir of disease; providing sufficient feed: good nutrition keeps animals in good health / reduces likelihood of infection / helps animals to avoid being infected / fight off disease quickly / keeps immune system strong / animals less likely to crowd / fight for food / avoids nutrient deficiency disease; regular health checks: identifies / monitors for signs of disease / avoids problem / can treat disease early / prevents transmission / further spread to other animals / maintain disease-free status; vaccination of young stock: confers immunity / animals produce antibodies / helps the animal fight against the disease / become less severely ill / ill for a shorter time period / stops animals catching the disease / reduces pest / disease burden / level of infection / prevents infection; ventilation: reduces airborne / respiratory disease / transfer / lowers humidity / allows livestock to breathe clean / fresh air / air free of infectious agent / cools temperature;	**6**

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Question	Answer	Marks
3(b)	For example: selective breeding to remove disease; provide different feed / feed supplements; health treatments, e.g. spray / dip / dose; do not overcrowd; remove stress factors, e.g. comfortable / quiet place to sleep; provide clean (drinking) water / food; cull animal; burn / bury carcases of dead animals; sell animal / take to market; change the environment, e.g. keep the animal outdoors / in a field / prevent entry into random pastures / keep indoors / use zero grazing; keep together with different animals / separate old and younger stock; enrich environment / provide stimulus, e.g. hang chains for animals to play with / provide roosting places;	**2**

Question	Answer	Marks
4(a)	Both harvesting and storage must be described for full marks. Named crop required for credit. description of harvesting method relevant for crop, e.g. combined harvesting for cereals / hand pulling / cut (down) / digging / ploughing up / lifting machine for root crops / cutting for leafy vegetables; description of relevant storage for crop, e.g. building / area / container / clamp / hole in the ground / in sun to dry / in the refrigerator; description of storage conditions relevant for crop, e.g. dry / well ventilated / cool / other condition suitable for named crop;	**3**
4(b)	competition for light; competition for minerals / nutrients; competition for water; competition for space; harbour pests; harbour diseases; contaminate crop; interfere with harvesting process;	**3**

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Question	Answer	Marks
5(a)(i)	(the process by which) pollen is transferred / moved; from an anther to a stigma;	**2**
5(a)(ii)	increasing the numbers of pollinators / bees / attracting pollinators; growing wild flower margins; growing (male and female) plants close to each other / in the same field; create drifts (to attract pollinators); dusting / painting flowers / artificial pollination; provide shelter / exposure to wind qualified; sowing / planting orientation; grow herbs / brightly coloured / scented flowers; reduce pesticide use / apply pesticides when fewer pollinators are likely to be present; Accept other appropriate suggestions.	**2**
5(b)	A: stigma; B: anther; C: petal; D: sepal;	**4**

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Question	Answer	Marks
5(c)	One mark for the way and one mark for a relevant explanation, for example: has light pollen; so pollen is easily carried; produces a large amount of pollen; so the chances of pollen reaching the site of pollination are increased; anthers are hanging / outside flower; so pollen is easily released; stigma are feathery / outside the flower; so pollen is (easily) caught; (male) flowers are located at top of canopy / tall plant; so pollen can be easily released by the wind; male and female flowers are found on the same plant; so that there is an increased chance of successful pollination;	**2**

Question	Answer	Marks
6(a)(i)	addition of manure / compost / organic matter / dung / urine / urea, e.g. from grazing animals / overwatering / too much irrigation / (over)use of large amounts of (compound / ammonium) fertiliser / burying crop residues / intensive cropping;	**1**
6(a)(ii)	liming / adding limestone / limestone-related compounds / adding an alkali / base;	**1**
6(b)(i)	decay / decomposition of plants / organic material / dung / urine (releasing nitrogen compounds into soil / nitrogen is incorporated into soil); action of lightning; nitrogen-fixing bacteria in the soil, e.g. azotobacter; production of ammonium compounds / ammonification; action of nitrifying bacteria / nitrification; production of nitrites / nitrates; (soluble) nitrate can be absorbed by plants;	**4**

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Question	Answer	Marks
6(b)(ii)	stunted growth / spindly / thin plants; pale green / yellow leaves / chlorosis of the leaf; small leaves;	**2**

Question	Answer	Marks
7(a)	Named mammalian farm animal required for credit. (udder) swells; vaginal discharge / lubrication / wet vulva; pelvis relaxes; mother isolates itself; offspring moves into position; tail lifting / other signs / lies down; animal in pain / vocalising; cervix dilates; waters break; pushing / straining; contractions; offspring comes out / emerges; birth position described; umbilical cord breaks / is cut; membranes / placenta come out / cleansing; mother licks offspring; offspring starts to breathe; offspring tries to stand up etc.; offspring suckles / drinks milk; mother may eat / hide placenta; lactation starts;	**6**
7(b)	introduction of solid food / starts eating its own food; withdrawal of the supply of (mother's) milk;	**2**

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Question	Answer	Marks
8(a)	involves male and female; involves gametes; gametes are haploid; (genetic information from) two parents (is combined); fusion (of gametes / sex cells); forms a zygote; involves fertilisation;	**3**
8(b)	cervix: on or between shaded areas between vagina and uterus; ovary: oval-shaped structure at the end of the (oviduct) tube; oviduct: anywhere in tube leading from ovary to the uterine horns; vagina: between cervix and entrance;	**4**
8(c)	inseminating at the right time / when the animal is in heat; placing semen in the correct place (within the female) / at the cervix / in the uterus / well-trained / skilled inseminator / good insemination technique; good nutrition for animal; healthy animal; appropriate age of female; storing / transport / use of semen at the correct temperature; using multi-semen straws; ensure semen viability / motility; reducing animal stress; repeat the process (over several days);	**2**

Question	Answer	Marks
9(a)(i)	6.9;	**1**
9(a)(ii)	5.2;	**1**

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Question	Answer	Marks
9(b)	compaction of soil; damage to drainage; excessive cultivation / damage to soil structure; formation of a soil pan; damage to the growing crop, e.g. by wheels / draught animals; disease / weed spread; lack of staff training to use machines correctly; damaged / faulty machines; less precise use of chemicals / equipment resulting in damage to non-target species; oil / fuel spills can damage soil / kill crop; spillage / losses during harvesting and transport;	**3**

Question	Answer	Marks
10(a)	animals kept indoors / in yards / small paddocks / in restricted area; food is cut / conserved / harvested / bought in; (food / water) brought to animals; no grazing; controlled / measured diet;	**3**

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Question	Answer	Marks
10(b)	One mark for each description and one mark for each relevant explanation. Maximum of three marks for descriptions alone. For example: fencing the boundary; so other animals cannot enter / eat / damage the grazing available; planting more palatable forage species / grass / grazing; so more is eaten by animals / more animals can be fed in the same area; plant legumes / specific example of legume, e.g. clover; so the availability of nitrogen (compounds) in the soil is increased; spreading manure / using inorganic fertilisers; increases nutrients available / growth rate / yield of forage plants; irrigation; increases the water available for plant growth / assists in the uptake of nutrients / assists in photosynthesis; control weeds; reduces competition between weeds and pasture crops / more nutrients available for pasture crop;	**6**

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Question	Answer	Marks
10(c)	One mark is available for each relevant way. A maximum of three marks for ways alone. A second mark is available for each linked explanation. For example: different paddocks / grazing areas / fields are used; so animals can be kept in a defined area enabling other areas to grow; pasture can be rested / recovers; so pasture regrows / photosynthesis is increased; more forage is produced (overall); so the area sustains more animals; animals are forced to eat all the available grass / more grass is saved for conservation; so this maximises utilisation / (useful) yield of forage / wastage is reduced; risk of soil erosion is reduced; because there is less chance of overgrazing / vegetation coverage is maintained; grass regrows regularly; so pasture is younger / more nutritious; easier animal management / husbandry; so pest / disease build-up is avoided (more easily); less damage to the pasture by trampling from animals; so more of the grass crop is eaten by animals;	**6**

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Question	Answer	Marks
11(a)	applied to plant; absorbed through plant structures; circulates throughout the plant's tissues / reaches all parts of the plant; translocated / travels in the phloem; pest ingests poison; when feeding on the plant; pesticide kills pest; Accept other suitable descriptions.	**3**

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Question	Answer	Marks
11(b)	One mark is available for each relevant method of cultural pest control. A maximum of three marks for methods of cultural pest control alone. A second mark is available for suggesting how each method works. For example: crop rotation; breaks pest life cycle; grow companion plants; emit chemicals which keep pests away, e.g. marigolds, mustard; grow catch crops; crops grow quickly so are less affected by pest / pest host is removed / break lifecycle of pest; hand picking; pests removed from crop / pests killed manually; nets / traps; pests are prevented from reaching crop; ploughing; expose pests / eggs (to sunlight); plant resistant varieties; plants are not affected by the pest; remove / burn trash / residue and debris; pest breeding / living areas are removed; eliminate standing / stagnant water; reduces opportunity for pests to multiply; early / late planting; pests not present when crop is growing / most vulnerable;	**6**

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Question	Answer	Marks
11(c)	One mark is available for each correct way to apply herbicide safely. A maximum of three marks for methods of ways to apply herbicide safely alone. A second mark is available for explanation of each way. For example: follow all usage instructions; to ensure safe practice; do not apply more than advised; to avoid unintended effects / herbicide build up (in the environment); do not spray when windy; to avoid chemical drift / to areas of population / beneficial insects; do not spray near water courses / do not wash sprayer out in stream; to avoid water pollution; do not use near food / no eating / drinking / smoking; to avoid operators ingesting the (toxic) chemical; maintain equipment properly; to ensure no chemical leakage; use protective clothing / gloves / mask; to minimise skin contact / inhalation; use correct dilution / mixing; to avoid unintended chemical reactions / fumes / too concentrated a solution (which can be dangerous) / applying too much / damaging the crop / beneficial species;	**6**

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Question	Answer	Marks
12(a)	random sampling / sample (all) areas; detail of repeats, e.g. depth / location; use of GPS / mapping; tool used, e.g. auger; depth / not at immediate surface; remove contaminants / avoid contaminated areas; place in a container / test tube / beaker; add water; add barium sulfate / flocculating agent; allow to settle / shake and leave (to settle); add (an appropriate) indicator / use pH meter; calibrate pH probe / meter; place probe in water; compare with colour chart / read off scale; any colour / correct probe-reading detail;	**5**

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Question	Answer	Marks
12(b)	One mark is available for each reason. A maximum of three marks available for reasons alone. A second mark is available for a relevant explanation for each reason. For example: drains easily / is more permeable; so is less likely to be waterlogged; is easy to work; so less time / cost / energy is needed to plant crops; needs a small amount of tillage; so less chance of soil pans forming; has less soil erosion / is not eroded (easily); so (soil) stays in production / maintains structure under extreme conditions, e.g. rainstorm; has higher aeration / large air spaces (compared to no crumbs); so more oxygen is available (for respiration) / less chance of conditions being anaerobic / sustains microbes; warms up more quickly; so maintains a higher temperature / increases respiration rate; allows fertiliser to act more quickly / holds more organic matter / holds / makes nutrient available in the soil / close to plant roots; so is rich / richer in nutrients / makes nutrients available / less fertiliser needed; retains water; so growing crop does not suffer from a lack of water / water stress / may need less irrigation; holds plant roots well; so plants are not easily removed by wind / pests / remain growing in the soil / fewer gaps in crop; plant roots penetrate easily; so plants access nutrients / water more readily; Accept other relevant reasons and appropriate explanations.	**6**

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Question	Answer	Marks
12(c)	cut down / remove trees, e.g. use bulldozer / drag chains / use chainsaw; stumping / dig out tree roots / subsoiling to remove buried roots; burning / use of fire; remove bushes / weeds / apply herbicide; drain the area; remove stones / rocks / (fallen) trees;	**4**

Question	Answer	Marks
13(a)	no / much reduced uptake of water; nutrients can be unavailable / less available; slow growth rate; reduce rate of enzymatic / chemical reactions / photosynthesis / respiration; freezing can burst cells; can kill plants; can make plants brittle / break stems / leaves;	**4**
13(b)	fleece blankets / plastic covering / mulching; heating / fires in field; spring planting / plant after last frost; plant on slopes / not in valleys; shelter in field / hedges / fences / grow shelter crops; bring / grow indoors / in polytunnels / in a greenhouse; grow frost-resistant crops / cultivars; timing irrigation to prevent freezing (so the roots do not freeze); irrigation of (already) frosted crop (before sunlight falls on the frosted crop);	**5**

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Question	Answer	Marks
13(c)	One mark is available for each correct danger of excessive heat. A maximum of three marks available for dangers of excessive heat alone. Three marks available for descriptions of how to reduce these risks. For example: wilting / excessive water loss / high rate of transpiration; could be reduced by cooling; damage to (waxy) cuticle; could be reduced by shading / cooling; drying out the soil / excessive evaporation; could be reduced by mulching; less water is available for plants; could be reduced by watering / irrigation; plants become heat stressed; could be reduced by growing in controlled / cooler conditions / environment; root / shoot / plant growth reduced; could be reduced by selecting appropriate plant / variety / cultivar for climate; reduced photosynthesis / growth processes / tissue temperature gets too high / activity of enzymes / enzyme-catalysed reactions is reduced; could be reduced by shading; Accept other relevant dangers and descriptions of how risks can be reduced.	**6**

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Question	Answer	Marks
14(a)	(minimum) amount of food; required to keep an animal alive / healthy; for the animal to stay in its initial condition; no production; no gain / loss of body mass;	**3**
14(b)	producing milk / lactation; laying eggs; meat production; growth to adult size; pregnancy; growing wool / feathers / hide; weaning; working / draught animal; Accept other suitable livestock farming situations.	**4**

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Question	Answer	Marks
14(c)	One mark is available for each food. A maximum of four marks available for foods alone. A second mark is available for stating a nutrient each food contains. Nutrients must be different for credit. Food must be stated for nutrient mark to be awarded. For example: forage / grass / silage / hay; carbohydrate; protein; roughage / fibre; pulse / bean / pea; protein; roughage / fibre; fishmeal / meat / bonemeal / meat and bone meal; protein; minerals; vegetables / vegetable waste / leaves / stems / seaweed; carbohydrate; water; vitamins; minerals; concentrate feed; protein; carbohydrate; fat; vitamins; minerals; oil seeds / soy bean / fish oils; fat / oil; protein; Accept other suitable examples.	**8**

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