

0170-505

Level 2 Technical Award in Land-Based Studies –Theory exam

SAMPLE Mark Scheme

Marker guidance

Unless otherwise stated in the marker guidance for a specific question, the following conventions apply:

- All marking, from start to finish must be consistent and in line with the mark scheme guidance. Continue to refer to the mark scheme throughout marking.
- For questions that ask for a specific number of points, accept the first answers given up to the number requested e.g. State three... only accept the first three answers listed, and disregard any additional answers provided.
- For questions requiring continuous prose answers, mark positively – all correct answers should receive the appropriate mark according to the mark scheme. Any wrong (**but neutral**) answers should be ignored, and no marks should be lost.
- In some circumstances, it is appropriate to disallow a candidate answer that initially appears to give the correct answer as given in the mark scheme, if it is undermined by the fact that it goes on to actively **contradict** its intention. Sometimes the minimal wording used in the mark scheme allows a match that in reality is trivial and it is clear the candidate is referring to the wrong knowledge/understanding. Only the part of the response to which the contradiction applies should be disallowed, not the whole response. Material that is irrelevant/neutral but not contradictory should be ignored and positive marking applied as above.
- Use all marks for a question as described by the mark scheme – e.g. for a 2 mark question, 0, 1 or 2 marks will always be available to award (never just 0 or 2). For levels marking, the full range of marks should be used freely as described by the mark scheme including 0 and full marks.
- Always award whole marks; ½ marks cannot be awarded.
- Allow phonetic misspellings as long as the meaning is clear, i.e. not so similar to another relevant but wrong term that you have to guess which was intended.
- Only allow 'it' as reference to the question topic if it is clear what 'it' refers to.
- Mark crossed out work UNLESS it has been replaced by another response.
- Where judgement is required, apply the guidance. Where the guidance does not sufficiently support for a particular candidate response/interpretation, contact your Team Lead.
- Accept alternative wording which reflects that given in the mark scheme.
- Contact your Team Lead if any additional correct answers arise which need to be added to the mark scheme.

For level of response mark schemes:

Note: indicative content has been provided to help orient the marking, providing a sense of the intentions of the question and expected parameters of the response. It is not exhaustive, and candidates do not need to cover all points referenced. Candidates may provide good quality responses while taking an approach which legitimately focuses either on breadth or depth given the time constraints. While the best responses are more likely to go to some depth across a broader range, there will be acceptable variation. Any pointers in the question towards coverage eg '...a range of...' should be kept in mind and balanced, though professional judgement, as to how much this affects the overall quality of the response when applying the marking instructions.

The marking should be carried out with reference to the levels descriptors in the marking instructions as follows:

- First, read the full candidate response and decide which band descriptor best fits the overall level of quality of the response.
- Then, to decide on a mark within the band, consider the **degree to which the response fits the criteria:**

Comprehensively	Top of mark range for the band	5 th	4th	3rd
Substantially		4th	3rd	
Generally		3rd		2nd
		2nd	2nd	
Borderline	Positively mark and place on the bottom of the band	1st	1st	1st

Q	Acceptable answer(s)	Guidance	Max mks	Ref
1	a) Name two Government organisations that may influence land use. (2 marks) b) For one of the organisations named in 1a), describe one of their effects on the farming industry. (2 marks) Answer a) 1 mark each, up to 2 marks b) Up to 2 marks for description Department for Environment Food and Rural Affairs (DEFRA) - Farmers must follow the policies/legislation that DEFRA introduce to protect the natural environment (1), so they do not pollute the environment through use of pesticides/chemicals on their land (1). - Require farmers to record the movement of animals (1) so that they can be tracked in the event of an outbreak of disease such as foot and mouth/avian flu (1). - Put policies in place (1) to ensure farmers protect the natural environment/ biodiversity/plants/ animals (1). - Monitor the movement of animals (1) as this will ensure we know where all animals are if there is an outbreak of a disease (1). - To improve environmental protection and pollution control (1) to safeguard the natural environment (1). - They control what pesticides can be used by farmers (1) to protect humans/animals/ the environment(1). Natural England - Protect and improve England's natural environment (1) by managing the agri-environment schemes which farmers receive payment for (1). - Manage National Nature Reserves (1) so would need to follow guidelines (e.g. cutting hedges at certain times, restrictions on land use) (1). - Enforce the rules and/or regulations of work undertaken by farmers (1) through fines for rule-breaking (1). Environment agency (EA) - Put restrictions on water usage (1) to ensure supplies do not run short (1).	Accept any other relevant Government organisation. Accept organisations from outside of England	4	201 1.1 AO1 AO2

	• Protect water courses (1) as they may fine farmers if they pollute them with chemicals, effluent or slurry. • Control NVZ's (1) which will limit the amount of fertiliser applied and restrict the timings of applications(1). • EA manages the risk of flooding from rivers (1) so helps to protect farmland (1). National parks • Aims to preserve areas of special interest (1) so can place restrictions on land use (1)/ stocking rates(1). • Controls planning permission for buildings (1) so to comply there will be restrictions on what can be built on the farm.			
2	Explain three ways that topography can influence the choice of farming enterprise. (6 marks) Answer Explanations of three ways their given topographical features influence farming choices each making two of the following links Up to 2 marks for each explanation, to maximum of 6 marks • On lowland farms arable cropping takes place with large fields and large machines (1) benefiting from economies of scale (1). • Access to fields would influence the size of equipment used (1) as vehicles used for slopes are required to be more stable. (eg, wider wheels, 4 wheel drives, lower centre of gravity) (1). • Unable to grow and harvest arable crops on mountains/steep hills (1) due to poor quality soil (1). • Dairy cows are more suited to lower ground (1) as grass production is higher and of better quality. (1) • Mountain more suited to sheep production (1) because they can eat rough grass grown on poor soil (1). • Machinery needs to be smaller and designed to work in all terrains (1) as it is more dangerous to access the land with large machinery (1). • South facing land tends to be warmer land (1) so soil warms up earlier in the spring allowing crop growth to start earlier (1). • South facing stays warmer in the autumn allow crops to keep growing longer (1) so allowing higher overall yields. (1) • North facing land tends to be colder land, (1) soil warms up latter in the season (1)/ is more prone to frost (1). • North facing crops start growing later in the season (1)/stop growing earlier in the autumn (1) so reducing overall production. (1)	Accept any other relevant answer	6	201 1.2 AO2

3	Explain two potential benefits of Genetically Modified (GM) crops. (4 marks) Answer Up to 2 marks for each explanation, to maximum of 4 marks • Nutritional content can be improved, (1) meaning people could gain the same nutrition from lower levels of food consumption. (1) • Foods can have a longer shelf life. (1) Instead of relying on preservatives to maintain food freshness while it sits on a shelf, (1) also makes them easier to transport for greater distances • Medical benefits can be possible (1) as it is possible to produce certain proteins and vaccines, (1) • It creates foods that are more appealing to eat (1) as colours/flavours can be changed or improved. (1) • Herbicides and pesticides are reduced (1) which will reduce the cost of production. (1) • Resistance to diseases (1) which will improve yield and profits. (1)	Accept any other relevant answer	4	201 2.2 AO2
4	a) Name two parts of a plant cell. (2 marks) b) Describe the function of each part named in 4a. (4 marks) Answer a) 1 mark each up to 2 marks b) 2 marks each up to 4 marks Cell wall • Made from cellulose fibres that provides the cell with strength (1) and structural support for the plant (1) Cell membrane • Has a permeable structure (1) which therefore controls the movement of substances in and out of the cell. (1) Cytoplasm • Contains dissolved nutrients and salts and structures called organelles. (1) • It is where many of the chemical reactions happen,(1) breaking down waste and aiding metabolic activity. (1) Nucleus • Contains genetic material, including DNA (1) which controls the cell's activities. (1) Mitochondria • Organelles that contain the enzymes for respiration (1) and where most energy is released in respiration.(1) Vacuole • Structure filled with cell sap to help keep the cell turgid (1) and isolate and/or store harmful material and/or waste(1) Chloroplasts • Organelles that contain the green pigment, chlorophyll (1) which absorbs light energy for photosynthesis. (1)	Accept any other relevant answer	6	202 1.1 Ao1 AO2
5	Explain one function of flowers on a plant. (2 marks) Answer:	Accept any other relevant answer	2	202 1.1

	Up to 2 marks • They produce male sex cells (pollen grains) and female sex cells (contained in the ovules) for reproduction (1) which must meet in a process called pollination (1) • Brightly coloured/strong scented/sweet nectar to attract pollinators (1) to move pollen from one flower to another to achieve pollination (1)			Ao2
6	Describe the process of aerobic respiration in plants. (4 marks) Answer: up to 4 marks (Aerobic respiration process in plants) occurs in the leaves, stems and roots (1) using glucose/sugars produced during photosynthesis and oxygen (1) to create energy for the plant growth (1). Carbon Dioxide and water are produced as part of the process (1)	Accept alternative descriptions of parts of the process	4	202 1.2 Ao2
7	List six consequences of an improper diet for an animal. (6 marks) Answer 1 mark for each, up to 6 marks • malnutrition • obesity • stunted growth • skeletal problems • Reduction in milk production • Poor quality of milk • Metabolic problems • Increase chance of health problems (eg tumours) • Weak • Malformed • Dead offspring	Accept any other relevant consequence	6	202 3.3 AO1
8	For an animal of your choice, describe six visual signs of good health. (6 marks) Answer Up to 1 mark for each, to maximum of 6 marks • Alertness of the animal as it should be active and holds its head up watching what is happening around it. (1)/ Ears should be pointed and/or erect. (1) • Movement of the animal [GAIT] as it should walk easily with all its	Accept any other relevant visual sign linked to the chosen animal.	6	202 AO2 4.2

	feet taking its weight with its steps regular. (1) • Nose and muzzle should be clean with no discharge. (1) • Eyes should be clear and bright with no discharge at the corners. (1) • Mouth of the animal should be no saliva/drool/vomit dripping from the mouth (1) / no sores/ulcers. (1) • The coat of the animal in poultry the feathers should be smooth, glossy and not ruffled. (1) / in short haired animals the coat should be smooth and shiny. (1) • Droppings or Dung of the healthy animal will be firm and consistent with the diet. (1) • Urine should be clear of any blood and the animal should show no pain or difficulty when urinating. (1) • Appetite and rumination, it is eating and drinking as normal, no food is being left. (1) • Condition of animal should be in normal body and condition for age and type (1) / with no signs of sudden weight loss. (1)			
9	List four factors that could affect the selection of new equipment on a farm. (4 marks) Answer • Cost • Value for money • Type of business • Operating environment • Climate / weather • Geography • Topography • Geology • Nature of the business concerned • Flexibility of usage • Running costs	Any other relevant answer	4	203 AO1 1.2
10	Explain why each of the following items of equipment are used in land management and production. a) A tractor b) A cultivator c) A combine harvester Answer	Any other relevant answer	6	203 AO2 2.1

	a) Tractors are used to carry out cultivations / tow trailers(1) because they have a three point linkage /towing hitch (1) b) Cultivators prepare the ground for crops (1) as they have tines that can move the soil (1) c) Combine harvester cuts, separates the grain and straw (1) because it has all the parts in one machine (1)			
11	Discuss how technology has affected animal production, health and welfare on commercial farms. (12 marks) Answer <i>For no awardable content, award 0 marks.</i> Band 1 (1-4 marks) Limited discussion of how technology has affected animal health and welfare. There will be limited examples. Answer may be disorganised and ambiguous. Band 2 (5-8 marks) Adequate discussion of how technology has affected animal health and welfare. There will be adequate examples. There will be some use of specialist terms, although they may not always be used appropriately. The information is presented mostly in a structured format. Band 3 (9-12 marks) Detailed discussion of how technology has affected animal health and welfare. There will be detailed examples. Specialist terms will be used correctly and appropriately. Information will be presented in a structured format and logical order.	Indicative content Building Climate Control makes buildings a healthier place for animals Data collection from tagging Ultrasound pregnancy testing equipment allows feeding regimes to be adjusted depending on number of foetuses. Biomechanical measurement equipment allows feeding regimes to be adjusted Pressure pads allows animals to be weighed regularly and easily to help work out diets Pedometers allow checks on distance walked. Thermographic imagery allows medical problems to be diagnosed DNA 'fingerprinting' can help pick up any hereditary problems Animal cloning could allow particular characteristics to be kept Semen preservation could allow particular characteristics to be kept Hydrotherapy can allow muscle regeneration after injury Exercise equipment can allow muscle regeneration after injury Magnetic therapy can help in the treatment of arthritis Treadmills can help in exercise regimes	12	thi AO4

		Weighbridge/Scales can help keep animals at a healthy weight		
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