

Qualification: 0171-32-006/506 Level 3 Agriculture – Theory exam (2) (Mixed Farming)

March 2019

1	<p>a) List two pieces of equipment that could be used to make a crop of silage. (2 marks)</p> <p>b) State one function of each piece of equipment listed in 1a). (2 marks)</p>		
	Acceptable answer(s)	Guidance	Max mks
	<p>a) 1 mark for each from any of the following – maximum 2 marks Forage harvester, trailer, mower, mower conditioner, rake, tedder, tractor, RTFL</p> <p>b) 1 mark for each function from any of the following – maximum 2 marks Forage harvester – picks up grass/chops grass/adds additive Trailer – moves grass to clamp Mower – cuts grass Mower conditioner - cuts/conditions grass Rake – puts many rows of grass into one /win row Tedder- spreads out grass to dry Tractor- tows trailer/ rolls clamp RTFL- spreads grass on clamp /consolidates clamp</p>	<p>Accept any other relevant answers</p>	4
2	<p>Explain three advantages of including clover in a seeds mixture for grazing. (6 marks)</p>		
	Acceptable answer(s)	Guidance	Max mks

	<p>2 marks for each advantage from any of the following; maximum 6 marks</p> <p>Nitrogen fixing means that there are nodes on the roots that <u>capture nitrogen</u> (1) allowing for <u>greater growth</u> rates of itself / surrounding plants. (1)</p> <p><u>High digestibility</u> (1) means that animals eating it are able to metabolise it very easily (1)</p> <p>There are higher levels of protein/minerals are in clover than in grass (1) which leads to better growth rates/milk production/healthier animals (1)</p> <p>Red clover has a tap root (1) which helps improves soil structure (1)</p> <p>Clover adds nitrogen to the soil (1) which helps increase fertility (1)</p> <p>In a drier part of the year the clover does not die back like grass (1) and therefore is available for the animals to eat (1)</p> <p>Palatable (1) which enables greater dry matter intake/eat more (1)</p>	Accept any other relevant answers	6
3	State four factors to be considered when deciding to cut grass for first cut silage. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark for each factor from any of the following; maximum four marks</p> <ul style="list-style-type: none"> • Stage of growth • Nutritional requirements of stock • Weather • Availability of staff/contractor • Age of sward • Grass varieties in sward • When last nutrients were applied • D-value • Ground conditions 	Accept any other relevant answers	4
4	State two qualities of chicory that would encourage its use in a grassland sward. (2 marks)		

	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark for each quality from any of the following; maximum 2 marks</p> <ul style="list-style-type: none"> • Drought resistant • Deep root • High yield • Palatable • Different growth pattern to grass (high yield in autumn) • Rich in minerals • Anthelmintic value/properties • Quick recovery after grazing 	Accept any other relevant answers	2
5	Explain four factors that will affect the growth pattern of grass throughout the year. (8 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>2 marks for each explanation from any of the following; maximum 8 marks</p> <ul style="list-style-type: none"> • Grass production curve/ growth peaks in late Spring (1) due to its agronomic characteristics (1) • Different species in the seed mixture (1) have differing heading dates (1) • Genetic makeup (1) means some varieties are diploid /haploid/tetraploid (1) • Nutrient application (1) will encourage earlier/later growth (1) • Soil type (1) the different particle size will affect growth/moisture/nutrient retention (1) • Temperature (1) a warmer soil will encourage growth (1) • Climate (1) rainfall will alter the growth pattern (1) • Topography (1) a south facing aspect will encourage grass growth (1) 	Accept any other relevant answers	8
6	List six points to consider when preparing a risk assessment for operating an All-Terrain Vehicles (ATV). (6 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark for each point from any of the following; maximum 6 marks</p>	Accept any other relevant answers	6

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	<ul style="list-style-type: none"> • Training of operator • Job to be done • Weather • Terrain • Condition of vehicle • Distance to help • PPE • Load to be carried • Public access • Lone working • Low branches/headroom 		
7	Explain three advantages of using a Rough Terrain Telescopic Forklift (RTFL) to move heavy loads. (6 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>Answer 2 marks for each advantage from any of the following; maximum of 6 marks</p> <ul style="list-style-type: none"> • Load sensor on RTFL (1) will let the operator know when near maximum safe load (1) • Torque converter eliminates use of clutch (1) which allows smooth transition between gear (1) • Extended reach (1) makes it safer for the operator to pick up a load (1) • Counterweight is built into a RTFL (1) making a safer distribution of load (1) • RTFL has better visibility (1) which allows safer operation (1) • RTFL has equal sized tyres/four-wheel steering (1) allows greater manoeuvrability (1) • An RTFL allows greater reach (1) for stacking (1) • An RTFL allows the operator to lift heavier weights safely (1) within the weight limit (1) • Avoids manual handling (1) which could cause risk of injury (1) 	Accept any other relevant answers	6
8	State four types of transmission found on an ATV or RTFL. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark for each type from any of the following; maximum 4 marks</p>	Accept any other relevant answers	4

	<ul style="list-style-type: none"> • Torque converter • Hydrostatic • Variator drive • Synchromesh • CVT transmission • Reduction gearbox 		
9	State four areas where the Health and Safety at Work Act affects the operation of an ATV or RTFL. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each max 4 marks</p> <ul style="list-style-type: none"> • Noise • Vibration • Hazardous substances • Risk assessment • Length of time working • Injury and illness protection • Training • PPE • Fit for purpose 	Accept any other relevant answers	4
10	Explain two differences between a diesel-powered ATV compared to petrol. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>2 marks for each answer from any of the following; maximum 4 marks</p> <ul style="list-style-type: none"> • A diesel ATV is heavier (1) because of the weight of the engine (1). • There is lower fuel consumption in a diesel (1) due to operating at lower rpm (1) • Diesel produces more torque (1) for carrying heavier loads (1) • Both engines have different particulates from the exhaust (1) due to refinement/combustion of fuel (1) • Higher initial cost for diesel powered (1) because it is a more robust /powerful machine (1) 	Accept any other relevant answers	4

11	<p>A farmer has noticed some bare patches in a grass field.</p> <p>Discuss the methods and plant species that the farmer might use to re-establish the sward, and how an ATV can be used to assist. (12 marks)</p>		
	Acceptable answer(s)	Guidance	Max mks
	<p>Band 1 (1-4 marks) Limited discussion of methods and plant species. There is minimal discussion on how an ATV can be used. Limited use of correct terminology. Answer may be disorganised and ambiguous</p> <p>Band 2 (5-8 marks) Adequate discussion of methods and plant species. There is some discussion on how an ATV can be used. Good use of correct terminology. The answer is presented in a fairly structured format.</p> <p>Band 3 (9-12 marks) Detailed discussion of methods and plant species. There is wide discussion on how an ATV can be used. Comprehensive use of correct terminology. The answer is presented in a well-structured and logical format.</p>	<p>Indicative content</p> <p>Plant species that could be used</p> <ul style="list-style-type: none"> • PRG, IRG, Timothy, Cocksfoot, Meadow Fescue, white clover, red clover, sainfoin, vetches, <p>Reasons</p> <ul style="list-style-type: none"> • Fast establishment, high yield, drought resistant, High quality, good for hay/silage making, early growth (bite), deep rooting, long lasting <p>Establishing methods</p> <ul style="list-style-type: none"> • Harrowing • Discing • Power-harrow • Rolling <p>All done to create a good, firm seedbed</p> <p>Use of ATV</p> <ul style="list-style-type: none"> • Manoeuvrability • Speed • Able to operate on difficult terrain • Cheap to run • Light • Granule applicator • Over-turning • Change in weight distribution from seeder • Do not go across slopes • Wear correct PPE • Inspecting and mapping field type • Take soil samples • Light weight carrier of GPS equipment 	12

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		<i>For no awardable content, award 0 marks.</i>	
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