Qualification: 0171-32-006/506 Level 3 Agriculture – Theory exam (2) (Mixed Farming)
March 2019

1  a) List two pieces of equipment that could be used to make a crop of silage. (2 marks)

   b) State one function of each piece of equipment listed in 1a). (2 marks)

<table>
<thead>
<tr>
<th>Acceptable answer(s)</th>
<th>Guidance</th>
<th>Max mks</th>
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<tbody>
<tr>
<td>a) 1 mark for each from any of the following – maximum 2 marks</td>
<td></td>
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<tr>
<td>Forage harvester, trailer, mower, mower conditioner, rake, tedder, tractor, RTFL</td>
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<tr>
<td>b) 1 mark for each function from any of the following – maximum 2 marks</td>
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<tr>
<td>Forage harvester – picks up grass/chops grass/adds additive</td>
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<td>Trailer – moves grass to clamp</td>
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<tr>
<td>Mower – cuts grass</td>
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<tr>
<td>Mower conditioner - cuts/conditions grass</td>
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<tr>
<td>Rake – puts many rows of grass into one/win row</td>
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<tr>
<td>Tedder- spreads out grass to dry</td>
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<tr>
<td>Tractor- tows trailer/ rolls clamp</td>
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<tr>
<td>RTFL- spreads grass on clamp /consolidates clamp</td>
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</table>

Accept any other relevant answers

2 Explain three advantages of including clover in a seeds mixture for grazing. (6 marks)

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<tr>
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</table>
2 marks for each advantage from any of the following; maximum 6 marks

Nitrogen fixing means that there are nodes on the roots that capture nitrogen (1) allowing for greater growth rates of itself / surrounding plants. (1)

High digestibility (1) means that animals eating it are able to metabolise it very easily (1)

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)

Red clover has a tap root (1) which helps improves soil structure (1)

Clover adds nitrogen to the soil (1) which helps increase fertility (1)

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)

Palatable (1) which enables greater dry matter intake/eat more (1)

Accept any other relevant answers

<table>
<thead>
<tr>
<th>3</th>
<th>State four factors to be considered when deciding to cut grass for first cut silage. (4 marks)</th>
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</thead>
<tbody>
<tr>
<td>Acceptable answer(s)</td>
<td>Guidance</td>
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<tr>
<td>1 mark for each factor from any of the following; maximum four marks</td>
<td>Accept any other relevant answers</td>
</tr>
<tr>
<td>• Stage of growth</td>
<td></td>
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<tr>
<td>• Nutritional requirements of stock</td>
<td></td>
</tr>
<tr>
<td>• Weather</td>
<td></td>
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<tr>
<td>• Availability of staff/contractor</td>
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</tr>
<tr>
<td>• Age of sward</td>
<td></td>
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<tr>
<td>• Grass varieties in sward</td>
<td></td>
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<tr>
<td>• When last nutrients were applied</td>
<td></td>
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<tr>
<td>• D-value</td>
<td></td>
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<tr>
<td>• Ground conditions</td>
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</table>

4 State two qualities of chicory that would encourage its use in a grassland sward. (2 marks)
### Acceptable answer(s)

1 mark for each quality from any of the following; maximum 2 marks

- 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

<table>
<thead>
<tr>
<th>Guidance</th>
<th>Max mks</th>
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<tbody>
<tr>
<td>Accept any other relevant answers</td>
<td>2</td>
</tr>
</tbody>
</table>

### Explain four factors that will affect the growth pattern of grass throughout the year. (8 marks)

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<th>Acceptable answer(s)</th>
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<tbody>
<tr>
<td>2 marks for each explanation from any of the following; maximum 8 marks</td>
<td>Accept any other relevant answers</td>
<td>8</td>
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</tbody>
</table>

- 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)

### List six points to consider when preparing a risk assessment for operating an All-Terrain Vehicles (ATV). (6 marks)

<table>
<thead>
<tr>
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<tr>
<td>1 mark for each point from any of the following; maximum 6 marks</td>
<td>Accept any other relevant answers</td>
<td>6</td>
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</tbody>
</table>
7 Explain three advantages of using a Rough Terrain Telescopic Forklift (RTFL) to move heavy loads. (6 marks)

Acceptable answer(s) | Guidance | Max mks
--- | --- | ---
Answer 2 marks for each advantage from any of the following: maximum of 6 marks | Accept any other relevant answers | 6
- 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)

8 State four types of transmission found on an ATV or RTFL. (4 marks)

Acceptable answer(s) | Guidance | Max mks
--- | --- | ---
1 mark for each type from any of the following; maximum 4 marks | Accept any other relevant answers | 4
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

1 mark each max 4 marks
- 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

2 marks for each answer from any of the following; maximum 4 marks
- 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
A farmer has noticed some bare patches in a grass field.

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)

**Acceptable answer(s)**

**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.

**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.

**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.

**Indicative content**

**Plant species that could be used**
- PRG, IRG, Timothy, Cocksfoot, Meadow Fescue, white clover, red clover, sainfoin, vetches,

**Reasons**
- Fast establishment, high yield, drought resistant, High quality, good for hay/silage making, early growth (bite), deep rooting, long lasting

**Establishing methods**
- Harrowing
- Discing
- Power-harrow
- Rolling
All done to create a good, firm seedbed

**Use of ATV**
- 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
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<th>For no awardable content, award 0 marks.</th>
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