

Qualification: 0171-33-012/512 Level 3 Agriculture-Theory exam (2) -Arable
March 2019

1	Describe how the following types of waste can be disposed of safely.		
	a) Metal. (1 mark) b) Fertiliser. (1 mark) c) Oils. (1 mark) d) Plastic. (1 mark)		
	Acceptable answer(s)	Guidance	Max mks
	1 mark for each from any of the following – up to 4 marks a) Metal – reused for fabrication / taken to scrap yard for recycling b) Fertiliser – can be spread on suitable land c) Oils– Collected by a licensed recycling company d) Plastic – recycled by a licensed recycling company	Accept any other relevant answers c) and d) Answers must specify that the company collecting the waste is licensed /registered to do the job to achieve the marks	4
2	State four pieces of legislation that apply to the storage, handling and disposal of farm waste. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	1 marks for each piece of legislation from any of the following; maximum 4 marks <ul style="list-style-type: none"> • The Groundwater Regulations • The Environment Protection Act/Regulations • The Environment Act • The Waste Management Licensing Regulations • The Control of Pollution Act 	Answers must be precisely worded Accept any other suitable answer	4

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	<ul style="list-style-type: none"> • The Framework Directive on Waste, Scrap Metal Dealers Act • The Controlled Waste Regulations • The Civic Government Act • The Waste Electronic and Electrical Equipment Directive • Batteries Directive • Landfill Directive 		
3	Explain two factors that should be taken into account by the farmer when preparing a farm waste management plan. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>2 marks each from any of the following; maximum 4 marks</p> <ul style="list-style-type: none"> • Proximity of water courses/boreholes (1) to avoid pollution (1) • Whether the land is high/medium/low risk (1) as this will dictate how much waste can be applied • An analysis of all farm wastes (1) so accurate amounts of wastes can be applied / accurate records can be kept(1) • The quantity of waste produced (1) to help reduce waste production/to have sufficient storage/ to have sufficient land to safely spread the waste on (1) • Cross compliance issues that may arise (1) to know the limits of waste that can be applied (1) • Proposed application rates and zones (1) to comply with legislation /to ensure good crop growth / to avoid pollution (1) • Using slurry/FYM (1) to offset the need to use inorganic fertiliser (1) 	Accept any other relevant answers	4
4	List four different types of farm habitat that are important for the conservation of wildlife. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark for each habitat, maximum of four marks</p> <ul style="list-style-type: none"> • Hedges • Stone walls • Ponds/lakes/rivers/streams • Woodland/forest/copse • Field margins/conservation headland 	Accept any other relevant answers Ponds/lakes/rivers/streams should not be marked as separate answers	4

	<ul style="list-style-type: none"> • Grassland • Heathland/upland/mountains 	<p>Woodland/forest/copse should not be marked as separate answers</p> <p>Field margins/conservation headland should not be marked as separate answers</p> <p>Heathland/upland/mountains should not be marked as separate answers</p>	
<p>5</p>	<p>Explain how the following ways could increase the number of species on a farm, having carried out an ecological survey.</p> <p>a) Good hedge management. (4 marks)</p> <p>b) Field margins. (4 marks)</p>		
	<p>Acceptable answer(s)</p>	<p>Guidance</p>	<p>Max mks</p>
	<p>Answer</p> <p>4 marks from any of the following</p> <p>a) Good hedge management to improve bird nesting sites (1) and to ensure there is food for birds during winter (1). It can be used to create wildlife corridors (1) and to reduce predation (1). It can create a suitable habitat for insects/mammals (1).</p> <p>4 marks from any of the following</p> <p>b) Field margins provide a wide range of food for species (eg seeds, flowers) (1). They can improve beneficial insects (1) so that less sprays (insecticides) need to be used (1). It can be used to create wildlife corridors (1). Provides a suitable site for ground nesting birds (1) because the area is free of fertiliser/pesticides/traffic (1)</p>	<p>Accept any other relevant answers</p>	<p>8</p>
<p>6</p>	<p>State four factors that need to be taken into account by the operator when calibrating a tractor mounted sprayer. (4 marks)</p>		

	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark for each factor from any of the following; maximum 4 marks</p> <ul style="list-style-type: none"> • Speed of operation • Volume of water • Droplet size • Size of nozzles • Pressure • Distance between nozzles 	Accept any other relevant answers	4
7	Explain four factors that would affect the accurate application of fertilisers. (8 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>2 marks for each factor explained, from any of the following; maximum 8 marks</p> <ul style="list-style-type: none"> • Correct calibration (1) to ensure the correct amount of fertiliser is put on the land (1) • If there is poor quality of material it could break up when spreading wide bout widths (1) leading to uneven spread (1) • Moisture could reduce flow rate (1) leading to low application rate/blocking the machine (1) • High wind speeds (1) can cause uneven spread especially at wide bout widths (1) • Spreading height (1) would give an uneven spread if set too low the fertiliser won't spread to the full bout width. (1) • If not set to the correct level (horizontally) (1) it would give a distorted spread pattern (1) • PTO set incorrectly (1) too fast would spread fertiliser too wide (1) • Damaged or worn spout / vanes (1) would affect the evenness of spread (1) • Incorrectly set spout/vanes (1) would affect the evenness of spread (1) • Driver driving too close would cause overlapping (1) and driving too far away would cause fertiliser to be missed in the centre. (1) 	Accept any other relevant answers	8
8	Explain two pre-start checks that should be carried out on an All-Terrain Vehicle (ATV). (4 marks)		
	Acceptable answer(s)	Guidance	Max mks

	<p>2 marks for each from any of the following: maximum of 4 marks</p> <ul style="list-style-type: none"> • Fuel level (1) so that ATV does not run out during operation (1) • Engine oil level (1) so that ATV does not over-heat / or damage the engine (1) • Air filter (1) to ensure efficient operation of engine (1) • Transmission oil (1) so that drive line does not over-heat /or get damaged (1) • Brake fluid level (1) so that braking is not impaired (1) • Tightness of wheel nuts (1) to ensure wheels do not come off (1) • Tyre pressure (1) for safe travel (1) • Lights/indicators (1) to comply with road traffic regs (1). 	Accept any other relevant answers	4
9	State four specialist features found on a RTFL. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each, maximum of 4 marks</p> <ul style="list-style-type: none"> • Extended reach • Load sensor • Torque convertor • Counter weight • Selection of steering modes • Falling object protection system (FOPS) • Inclinator 	Accept any other relevant answers	4
10	List four different ways of improving traction when using a RTFL. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each, maximum of 4 marks</p> <ul style="list-style-type: none"> • Adjust tyre pressure • Ballast tyres • Change steering mode • Weight distribution • Ensure enough tyre tread • Use differential lock 	Accept any other relevant answers	4

	<ul style="list-style-type: none"> • Turn the tyre around for better grip in reverse 		
<p>11</p>	<p>A farmer is using a Rough Terrain Telescopic Forklift (RTFL) to load 600Kg fertiliser bags into a twin disc fertiliser spreader which will then be spread on a level arable field.</p> <p>Discuss the advantages of using the RTFL in this situation, and how to minimise damage to the environment when loading and spreading the fertiliser. (12 marks)</p>		
	<p>Acceptable answer(s)</p>	<p>Guidance</p>	<p>Max mks</p>
	<p>Band 1 (1-4 marks) Limited discussion of the advantages for using the RTFL. Little discussion of minimising the environmental impacts. There is lack of technical language and answer may be disorganised and ambiguous.</p> <p>Band 2 (5-8 marks) Adequate discussion of the advantages for using the RTFL. Some discussion of minimising the environmental impacts. There is some use of technical language. The answer is presented in a fairly structured format.</p> <p>Band 3 (9-12 marks) Detailed discussion of the advantages for using the RTFL. Wide discussion of minimising the environmental impact. There is extensive use of technical language. The answer is presented in a well-structured format.</p>	<p>Indicative content</p> <p>Advantages of using an RTFL</p> <ul style="list-style-type: none"> • Telescopic boom • Safety of placement in hopper • Torque converter gives greater speed control • Load sensor • Stability of machine • Counterweight • More manoeuvrable – 4 wheel steer <p>Environmental damage</p> <ul style="list-style-type: none"> • Use headland discs • Correct calibration • Correct setting up of machine • Avoid overlapping • Be aware of ditches/watercourses • Avoid spillages and clear them up • Correct weather/ground conditions • Risk assessment • Operator must be trained for RTFL and spreader • Comply with current legislation <p><i>For no awardable content, award 0 marks.</i></p>	<p>12</p>