

**Qualification: 0171-033-010/510 Level 3 Agriculture – Theory exam (2)
(Livestock)**

March 2019

Q1	Name two parts of the respiratory system. (2 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each for any of the following, to a maximum of 2 marks:</p> <ul style="list-style-type: none"> • nasal cavity • larynx • trachea • lungs • bronchi • bronchioles • alveoli • air sacs. 		2
Q2	Define the following terms.		
	<p>a) Genotype. (1 mark) b) Phenotype. (1 mark)</p>		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each for any of the following, to a maximum of 2 marks:</p> <p>a) Genotype – the genetic makeup of animals b) Phenotype –the appearance of animals.</p>	Accept any other suitable answer including plants/organisms	2

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Q3	Explain how a polled cow mated with a polled bull can produce horned offspring. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each for any of the following points, to a maximum of 4 marks:</p> <p>The polled cow and polled bull are both heterozygous (carrying the polled and the horned gene) for the polling gene (1) they are not homozygous (carrying two of the same gene) for the polling gene (1). The polling gene is dominant over the horned gene (1). The combination of the recessive gene for horns carried on both sides (1) can result in a horned offspring (1).</p>	Accept any other suitable answer	4
Q4	List four different beef traits represented by Estimated Breeding Values. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each for any of the following, to a maximum of 4 marks:</p> <ul style="list-style-type: none"> • Gestation length • Birthweight • 200 day weight • 400 day weight • 600 day weight • Calving ease • Maternal calving ease • Calving ease Daughters • Back Fat depth • Muscle depth • Eye muscle area • 200 day Milk 	<ul style="list-style-type: none"> • Any other suitable answer • Do not accept 'weight' as an answer on its own 	4

Q5

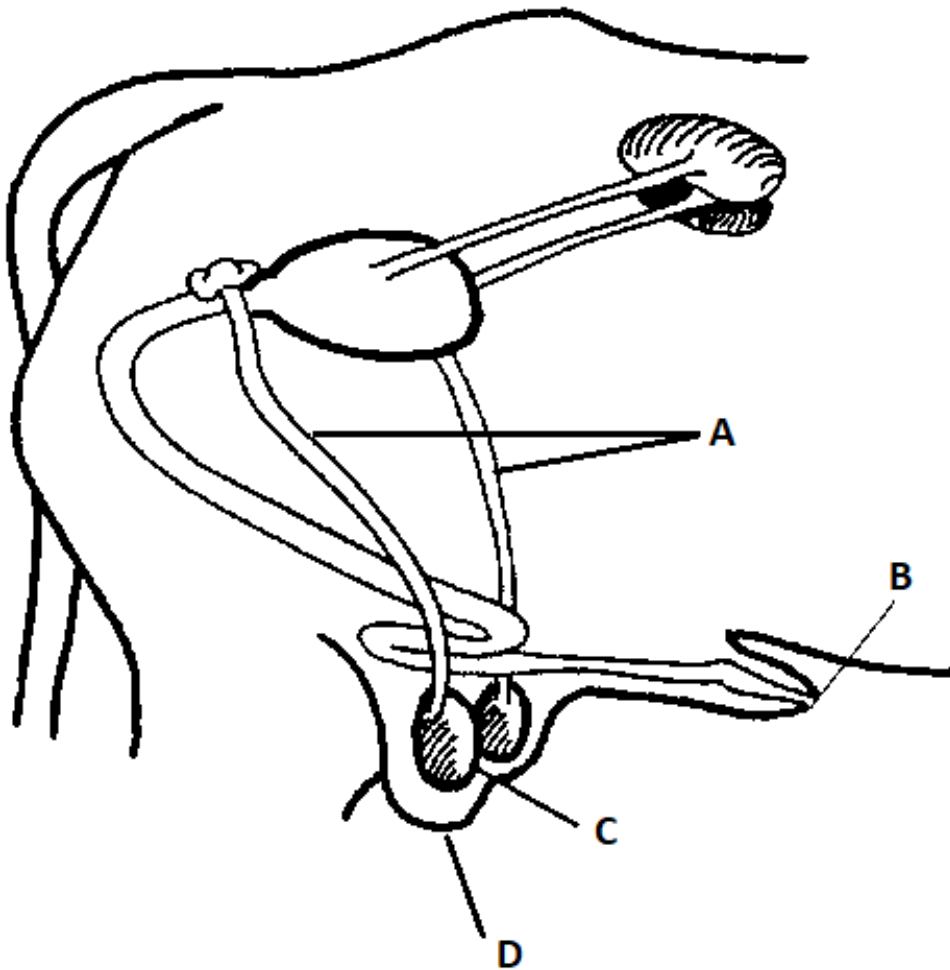


Figure 1

Using Figure 1, name the parts of the male reproductive system, labelled A-D. (4 marks)

	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each for any of the following, to a maximum of 4 marks:</p> <p>A- Vas deferens</p> <p>B- Penis</p> <p>C- Testicles</p> <p>D- Scrotum</p>		4

<p>Q6</p>	<p>a) State four factors affecting the nutritional requirements of commercial pigs. (4 marks)</p> <p>b) Describe how each of the factors from a) affect the nutritional requirements of commercial pigs. (4 marks)</p>		
	<p>Acceptable answer(s)</p>	<p>Guidance</p>	<p>Max mks</p>
	<p>a) 1 mark each for any of the following, to a maximum of 4 marks:</p> <ul style="list-style-type: none"> • Age • size • health • gestation, • lactation • environment • productivity • monogastric digestive system <p>b)1 mark each for any of the following, to a maximum of 4 marks:</p> <ul style="list-style-type: none"> • Age- piglets will require a higher protein diet than adults/ young animals convert feed more efficiently. • size – quantity of feed (bigger animals require more food) • health – animals may require special diets or treatments added to food • gestation – higher protein required in late gestation/pregnancy • lactation – increased water requirement / higher protein required /increased feed quantity • environment – outdoor pigs will eat more than indoor pigs/temperature will affect appetite • productivity- diet suited to market requirement of pigs • monogastric digestive system - not suited to digestion of highly fibrous feed (grass/hay/straw etc) (ie correct type of food must be chosen) 	<p>Accept any other suitable answer</p>	<p>8</p>

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Q7	Name four high protein sources suitable for use in a ruminant's diet. (4 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each for any of the following, to a maximum of 4 marks:</p> <ul style="list-style-type: none"> • Soya • Beans • Peas • Rapeseed meal • Lupins • Clover • Lucerne 	Any other suitable answer other than grains and grass.	4
Q8	Describe two methods that a farm can use to improve accuracy when applying organic waste to land. (2 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each for any of the following, to a maximum of 2 marks:</p> <ul style="list-style-type: none"> • Global positioning systems can aid pin pointing of machinery to exact locations and quantities required on a field • Nutrient management maps can show areas where more or less fertiliser/nutrients is required • Trailing shoe/band spreader/direct injections are fixed widths therefore avoids overlapping. 	Accept any other suitable answer	2

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Q9	<p>a) State four factors to consider when planning the disposal of organic farm waste. (4 marks)</p> <p>b) Explain two reasons why it is important to analyse organic farm waste before application. (4 marks)</p>		
	Acceptable answer(s)	Guidance	Max mks
	<p>a) 1 mark each for any of the following, to a maximum of 4 marks:</p> <ul style="list-style-type: none"> • Method • Weather conditions • Topography • Water courses • Legislation • Cost • Nutritional status of soil • Proximity of housing <p>b) 2 marks each for any of the following, to a maximum of 4 marks:</p> <ul style="list-style-type: none"> • It is important that the correct application limits are not exceeded (1) in order to reduce the use of non-organic fertilisers (1) • It is important to ensure that the ground is not polluted with excess (1) to reduce run off/damage to the crops /comply with legislation (1) 	Accept any other suitable answer	8
Q10	State six ways to help prevent a rough terrain telescopic forklift (RTFL) from overturning, when loading a trailer with farm yard manure. (6 marks)		
	Acceptable answer(s)	Guidance	Max mks
	<p>1 mark each for any of the following, to a maximum of 6 marks:</p> <ul style="list-style-type: none"> • Carry out a risk assessment • Ensure operator is trained • Check tyre pressures are correct • Load on level ground • Do not extend the boom any further than necessary • Do not travel with boom in the air 	Accept any other suitable answer	6

	<ul style="list-style-type: none"> • Keep speed down • Ensure load sensor is working 		
Q11	<p>A farm worker is driving a sit-astride ATV with no differential.</p> <p>Explain why they should lean, when cornering at low speeds. (4 marks)</p>		
	Acceptable answer(s)	Guidance	Max mks
	<p>2 marks each for any of the following, to a maximum of 4 marks:</p> <ul style="list-style-type: none"> • If the ATV has no differential it will be difficult to turn (1) as both back wheels are turning at the same speed (1) • Leaning on the inside of the corner will take weight of the outside wheel (1) allowing it to slip and aid turning (1) 	Accept any other suitable answer	4
Q12	<p>Discuss selective breeding in livestock production and its importance in the future. (12 marks)</p>		
	Acceptable answer(s)	Guidance	Max mks
	<p>Band 1– 4 marks</p> <p>Limited knowledge and discussion of the selective breeding of production livestock. There is a lack of understanding of past, present and future directions of selective breeding. Limited or no discussion of key concepts. The use of technical language is limited and occasionally imprecise.</p> <p>Band 5 – 8 marks</p> <p>Good knowledge and discussion of selective breeding of production livestock with some justification for points made. There is some understanding of past, present and future directions of selective breeding. There is some structure in the answer presented. The use of technical language is mostly accurate and consistent.</p> <p>Band 9 – 12 marks</p> <p>Excellent knowledge and discussion of selective breeding of production livestock with detailed</p>	<p>Indicative content</p> <ul style="list-style-type: none"> • Selective breeding has been used since the domestication of livestock to breed animals suited to production requirements. • Choosing breeding animals based on their traits- for example maternal instinct, temperament, muscle growth , milk production, fertility, conformation • Use of Estimated breeding values can be used to help selection of breeding stock • Reproductive technologies can help increase the rate of improvement – cloning / embryo transfer/ sexed semen • Selective breeding can be used to ‘breed out’ genetic/inherited disorders • Use of pedigrees to make breeding choices, different 	12

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	<p>justification for points made. There is substantial understanding of past, present and future directions of selective breeding. The whole answer is coherent and well-structured with relevant use of technical language</p>	<p>breeding systems outcrossing, hybrids, cross breeds.</p> <ul style="list-style-type: none">• Breeding disease resistant animals• Breeding ruminants that produce less greenhouse gas emissions and waste• Breeding more efficient animals – low input, high output – less waste- costs reduced – more profit• Animals are being bred for the environment <p><i>For no awardable content, award 0 marks.</i></p>	
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