Qualification: 0170-001/501 Level 2 in Land based studies– Theory Exam

March 2019

1

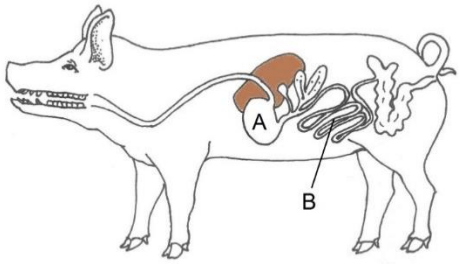

Figure 1

a. What type of digestive system is shown in Figure 1? (1 mark)
b. Name point A in Figure 1. (1 mark)
c. What are the processes that take place in point A? (2 marks)
d. Name point B in Figure 1. (1 mark)
e. What are the processes that take place in point B? (2 marks)

Acceptable answer(s)	Guidance	Max mks
a) 1 mark for Monogastric digestive system b) 1 mark for Stomach c) 1 mark each, up to 2 marks • Mechanical mixing of food/nutrients • Digestion of protein d) 1 mark for Small intestine (accept duodenum/Ileum/jejunum) e) 1 mark each, up to 2 marks • Digestion of nutrients • Absorption of nutrients • Peristalsis – (muscular contractions move nutrients through digestive system)		**7**

2

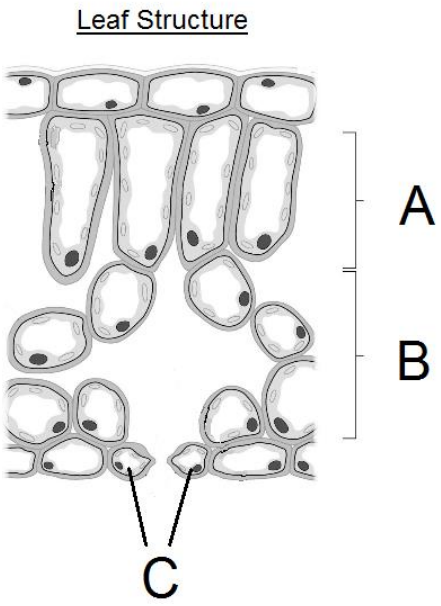

Figure 2

Name the structures A, B and C in Figure 2. (3 marks)

Acceptable answer(s)	**Guidance**	**Max mks**
1 mark each, up to 3 marks A – Palisade mesophyll (1 mark) B – Spongy mesophyll (1 mark) C – Guard cells (1 mark)		**3**

3 Describe the process of translocation. (3 marks)

Acceptable answer(s)	**Guidance**	**Max mks**
1 mark each, up to 3 marks • The sugar/food produced in the leaves by photosynthesis is transported in translocation • The sugar/food is transported through the stems • The sugar/food is stored	Accept any other relevant answer	3

4	Explain how sunlight can affect the rate of transpiration. (2 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark per explanation, up to 2 marks • In bright light transpiration increases • The stomata/guard cells (openings in the leaf) open wider allowing more water to evaporate.	Accept any other relevant answer	2
5	Describe **three** ways that ringworm can be spread. (3 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark each, up to 3 marks • By not washing hands and or not wearing PPE (+ other biosecurity measures) (1 mark) • Through delayed identification of infected animals (1 mark) • By not Isolating infected animals • By not decontaminating/cleaning the environment effectively after movement (1 mark) • High stocking density and contact with infected animals (1 mark) • By not quarantining incoming stock (1 mark)	Accept any other relevant answer	3
6	a) Name **two** pieces of personal protective equipment (PPE) that should be used when handling large animals. (2 marks) b) Give **four** reasons for carrying out a risk assessment when handling animals. (4 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	a) 1 mark for each, up to 2 marks • steel toe capped boots • gloves • overalls • hard hat	Accept any other relevant answer	6

	b) 1 mark for each, up to 4 marks • to comply with legislation and codes of practice (1 mark) • To identify potential **hazards** related to the task (1 mark) • To manage associated **risks** (1 mark) • To identify **potential risk** of accidents/injuries (1 mark) • To keep people safe and reduce chance of the risk (show due diligence)		
7	Name **two** occupations relating to animal health and welfare industries. (2 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark for each, up to 2 marks • Animal care • Equine • Farrier • Vet nursing	Accept any other relevant answer	2
8	Describe **four** ways topography can influence the success or failure of land use in the UK. (4 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark each, up to 4 marks • Difficult topography can restrict access to land, livestock • Different livestock prefer different topography types (e.g. highland breeds vs lowland breeds) • Crop choice - e.g. lowland/flat/level topography is better suited for arable/crops • Topography will influence the type of machinery used (e.g. highland areas will have ATVs and compact equipment vs lowland having larger equipment and greater production) • Topography can determine use of land for recreational features	Accept any other relevant answer	4

9	Explain **four** ways in which the landscape in the UK has changed since the year 1600. (4 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark per explanation, up to 4 marks • Enclosure of land has created hedges and boundaries • The industrial revolution produced machinery and techniques to increase food production after the wars • The industrial revolution resulted in a migration of people from the countryside to the city • The Agriculture Act increased farmed productivity • National Parks have been formed to protect and enhance the environment • Increased farm activity during and after the world wars • Joining the Common Market and Common Agricultural Policy has led to increased farming activity • Increased public access and Countryside and Rights of Way act • In more recent years, there's a greater emphasis on the environment	Accept any other relevant answer	4
10	Identify **two** potential advantages and **two** disadvantages of fracking in the countryside. (4 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	Advantages **1 mark, each up to 2 marks** • Production of cheap oil/gas • Less dependency on other oil/gas sources • Increase in employment opportunities **Disadvantages** **1 mark each up to 2 marks** • Noise pollution • Pollution of water/ground water • Earthquakes/seismic activity • Increased traffic/infrastructure	Accept any other relevant answer	4

11	Scientific advances are important in the modern land-based sector. Describe how land-based businesses can use technology to harness energy. (2 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark each, up to 2 marks • Solar energy – use of solar panels to produce electricity • Wind turbines to produce electricity • Accept hydroelectric power	Accept any other relevant answer	2
12	Describe **two** advantages and **two** disadvantages of using battery operated chainsaws. (4 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	Advantages: **1 mark each, up to 2 marks** • Battery operated chainsaws are more lightweight/ portable • Battery operated chainsaws are quieter than petrol • They are cheaper to run **Disadvantages:** **1 mark each, up to 2 marks** • They have a limited battery life • The environmental impact when disposing of the battery at the end of working life • Potentially slow re-charge time • High initial purchase cost	Accept any other relevant answer	4

13	List **four** pieces of technology/equipment that could be used in the environmental and conservation industries. (4 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	• GPS Equipment • 4X4 Vehicles • Quad bikes • Thermal imaging • Sound sensing equipment • Digital mapping • Remote cameras • Digital camera technology	Accept any other relevant answer	4
14	Discuss how advances in modern science and equipment help to maximise plant production and quality as well as help to minimise plant pests, diseases and the potential impact on the environment. (12 marks)		
	Acceptable answer(s)	**Guidance**	**Max mks**
	Band 1: 1 – 4 marks Basic discussion with a minimal range of examples of technology linked to increasing plant growth and quality. The candidate has made little reference to plant pest and disease prevention. Simple arguments for the use of modern science and technology. **Band 2: 5 – 8 marks** A sound discussion of the use of science and technology with a range of examples linked to increasing plant growth and quality. The candidate has made sound reference to plant pest and disease prevention. Clear arguments for the use of modern science and technology in crop production. **Band 3: 9 – 12 marks** A thorough discussion of the use of science and technology with a wide range of examples, clearly explained, linked to increasing plant growth and quality. The candidate has made thorough reference to plant pest and disease prevention. Thoughtful arguments for the use of modern science and technology in crop production.	Indicative content: • Plants require nutrients for maximum growth • Advances in fertiliser science have produced fertilisers which are slow release and target certain nutrients (N, P, K) • Fertiliser types to suit business – organic, inorganic, pellet, liquid etc. • Fertiliser application – modern technology allows for precision application of fertilisers (e.g. satellite and RTK units) as opposed to broadcast application. • IT used to manage soil and nutrients through input of soil test results • Disease and pest control methods - Biological pest control methods, mechanical pest control (traps, bird scarers etc.), physical pest control, chemical pest control • Soil testing and soil treatments can reduce risks of disease • Pests and disease resistant crops	12