

0173 Level 3 Technicals in Land and Wildlife Management
0173-013/513 Level 3 Land and Wildlife - Theory Exam
March 2022 Mark Scheme

Q no.	Acceptable answer(s)	Guidance	Max mks	Ref
Q1	<p>1 mark each for any of the following, to a maximum of 4 marks:</p> <ul style="list-style-type: none"> • Pure water has a neutral pH (1) • Water has a high surface tension (1) • Water is most dense at 4 degrees Celsius (1) • Water freezes at 0 degrees Celsius (1) • The boiling point of water is 100 degrees Celsius (1) • Water conducts heat easily (1) • Water consists of one Hydrogen atom and two oxygen atoms (1) 		4	306 1.2 AO1
Q2	<p>1 mark for each rock type identified, up to 2 marks.</p> <ul style="list-style-type: none"> • Igneous/any named igneous rock (1) • Sedimentary/ any named sedimentary rock (1) • Metamorphic/any named metamorphic rock (1) <p>1 mark for each formation description, up to 2 marks.</p> <ul style="list-style-type: none"> • Igneous/any named igneous rock - formed when molten magma cools and hardens (1) • Sedimentary/ any named sedimentary rock – formed from compression/lithification of particles of sand, shells, pebbles (1) • Metamorphic/any named metamorphic rock – Formed from metamorphosis under the earth surface (1) 		4	306 2.1 AO1
Q3	<p>1 mark for factor and 1 mark for explanation to a maximum of 4 marks</p> <ul style="list-style-type: none"> • Parent Materials (1) <ul style="list-style-type: none"> ○ soil will carry the characteristics of its parent material or rock from which it is formed (1) • Organic matter (1) <ul style="list-style-type: none"> ○ the greater the amount of organisms present, the richer and more fertile the soil will be (1) <p>Or:</p>		4	306 2.2 AO2

	<ul style="list-style-type: none"> ○ Increase in the amount of decaying organic matter present results in richer/more fertile soil (1) • Time (1) <ul style="list-style-type: none"> ○ Over time other environmental factors may change the soil's features, such as additional of organic materials/exposure to moisture. (1) <p>Any other suitable answer</p>			
Q4	<p>1 mark for each of the following to a maximum of 6 marks</p> <ul style="list-style-type: none"> • Anglers walking to/from/along banks causing erosion (1) leading to increased run off (1) increasing turbidity (1) impeding photosynthesis (1) • Excess uneaten bait (1) leads to increased nutrient availability (1) causing eutrophication (1) • Overstocking (1) increases risk of spread of disease/infection (1) affects food chain/web (1) 		6	306 4.2 AO2
Q5	<p>1 mark for each of the following to a maximum of 2 marks.</p> <p>Clay particles are smaller than sand particles and have a larger surface area (1) This large surface area allows the clay soil to hold a greater quantity of water (1)</p> <p>OR</p> <p>Clay particles are smaller than sand particles, and are more tightly packed together (1) The smaller space between particles means clay soils do not drain as freely, and therefore hold more water (1)</p>		2	306 2.2 AO2
Q6	<p>1 mark for any of the following to a maximum of 2 marks.</p> <ul style="list-style-type: none"> • Kidneys (1) • Skin (1) • Gills (1) 		2	312 1.2 AO1
Q7	<p>1 mark for any of the following to a maximum of 2 marks.</p> <ul style="list-style-type: none"> • Temperature (1) • Water quality (1) • Stress (1) • Angling pressure (1) 		2	312 2.2 AO1

Q8	<p>1 mark for each for any of the following to a maximum of 3 marks.</p> <ul style="list-style-type: none"> • Protein – required for tissue growth and development (1) • Fat – required for energy and cell growth (1) • Carbohydrate – required for energy storage (1) • Vitamins – required for maintaining optimal growth and health (1) • Minerals – essential components for metabolic functions (1) 		3	312 4.1 AO1
Q9	<p>1 mark for any of the following to a maximum of 3 marks</p> <ul style="list-style-type: none"> • To ensure a feeding regime with the correct nutritional components are being fed in correlation to the stage of the fish's life (1). • To ensure that the fish are fed the correct amount in accordance to their growth (1). • A regime ensures the holding capacity of the fish holding system is not exceeded (1). • A fish keeper is able to keep records of the regime and react accordingly if necessary (1) • Captive fish may not have sufficient access to other food sources to create a balanced diet (1) <p>Any other suitable answer</p>		3	312 4.2 AO2
Q10	<p>1 mark for each effect, 1 for each result, up to a maximum of 4 marks:</p> <ul style="list-style-type: none"> • Increase the rate of circulation in the fish (1), resulting in an increased demand for dissolved oxygen (1) • Increase the rate that the fish respire (1) and as a result the fish will excrete more waste products (1) • Increase the rate of digestion in the fish (1), resulting in an increase food demand (1) • It may trigger a spawning response in fish (1), resulting in the fish displaying stereotypical spawning behaviour (1) 		4	312 2.2 AO2
Q11	<p>1 mark for any of the following to a maximum of 2 marks</p> <ul style="list-style-type: none"> • Small round ulcers/lesions on skin of fish (1) • Ulcers/lesions usually with a white edge and red centre (1) • Rotting/ragged looking fins (1) 		2	344 1.2 AO1

	<ul style="list-style-type: none"> Sometimes red/white on rotting fin edges (1) 			
Q12	<p>1 mark for each of the following to a maximum of 2 marks</p> <ul style="list-style-type: none"> This is caused by the supersaturation in the water of nitrogen (1) This is caused by the supersaturation in the water of oxygen (1) 		2	344 3.2 AO1
Q13	<p>1 mark for each for any of the following to a maximum of 2 marks</p> <ul style="list-style-type: none"> Disease of Fish Act 1983 (1) Salmon and Freshwater Fisheries Act 1975 (1) Aquatic Animal Health Directive 2006 (1) Animal Welfare Act 2006 (1) Aquatic Animal Health Regulations 2009 (1) Veterinary Medicine Act 2006 (1) 		2	344 4.1 AO1
Q14	<p>1 mark for each for any of the following to a maximum of 2 marks</p> <ul style="list-style-type: none"> Protozoan (1) Mesozoan (1) Ectoparasites (1) Endoparasite (1) 		2	344 2.2 AO1
Q15	<p>1 mark for each explanation, up to a maximum of 3 marks.</p> <ul style="list-style-type: none"> Uneaten food within the water can irritate the gills of the fish (1) Bacteria breaking down the uneaten food reduces the amount of dissolved oxygen available to the fish (1) – OR - Fish will produce more waste which in turn will lead to a reduction in the amount of dissolved oxygen (1) The waste products of this process will then lead to an accumulation of toxins which are harmful to the fish (1) – OR - Fish will produce more waste which in turn will lead to an accumulation of toxins (1) 		3	344 3.2 AO2

	<ul style="list-style-type: none"> • Uneaten food may create a suitable environment for unwanted bacteria to proliferate and cause disease (1) <p>Any other suitable answer</p>			
Q16	<p>1 mark for each explanation, up to a maximum of 3 marks.</p> <ul style="list-style-type: none"> • The excess mucus is a sign that the fish has an ectoparasitic infestation and producing excess mucus in order to try and rid itself of the parasite (1) • Ectoparasitic infestation can cause the fish to flash in an attempt to knock off the parasites (1) • The reddening of the skin could be caused by irritation as a direct result of an ectoparasitic infestation (1) • The reddening of the skin could be a result of the flashing damaging the fish (1) 		3	344 2.2 AO2
Q17	<p>Basic Discussion 1-4 marks There is no link between factors and the influences they may have on the biosecurity considerations. There is no indication to the effective management of these influences. There is no specialist or technical terminology used. Answer may be disorganised and ambiguous.</p> <p>Some discussion 5-8 marks There are some links between factors and the influences they may have on the biosecurity considerations. Attempts have been made to discuss the effective management of these influences. Some specialist or technical terminology has been used, although not always appropriately. The information is presented mostly in a structured format.</p> <p>Detailed discussion 9-12 marks Detailed discussion links linking factors and the influences they may have on the biosecurity considerations. A detailed discussion as to the effective management of these influences has been provided. Specialist or technical terminology has been used appropriately and throughout. The information is well presented in a structured format.</p>	<p>Indicative content will include:</p> <ul style="list-style-type: none"> - Source of water - Surrounding land use - Topography of land - Transfer of disease on equipment - Source of brood stock and larvae - Relevant legislation - Fish behaviour - Disinfectants - Control of diseases - Environmental conditions - Physiology of fish - Quarantine procedures 	12	306 – 1.1, 1.2, 3.2, 4.1, 4.2, 4.3 312 – 2.1, 2.2, 3.1, 3.2, 4.2 344 – 1.1, 1.2, 2.1, 2.2, 3.2, 4.1