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Mark Scheme (Results)

Summer 2017

BTEC Level 3 Nationals in Animal
Management and Animal Management
with Science

Unit 2: Animal Biology (31645H)

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Question Number	Answer	Mark
1a)	Award 1 mark for each grouping level identified correctly. <ul style="list-style-type: none"> • Reptilia (1) • Pisces (1) 	2

Question Number	Answer	Mark
1b)	Award 1 mark for correct definition <ul style="list-style-type: none"> • A group of living organisms consisting of similar individuals that can interbreed • Organisms that can produce viable offspring <p>Accept similar wording.</p>	1

Question Number	Answer	Mark
1c)	Award up to two marks. <ul style="list-style-type: none"> • Individuals compete for limited resources/natural selection • Individuals in a population show genetic variation • Individuals with characteristics best suited to their environment are more likely to survive to reproduce • Selected characteristics are inherited • Genetic mutation <p>Accept similar wording.</p>	2

Question Number	Answer	Mark
1d)	Order Species	2

Question Number	Answer	Mark
2a)	A- Bone (1) B- Joint cavity/synovial (fluid) (1)	2

Question Number	Answer	Mark
2b)	<ul style="list-style-type: none"> • Cartilaginous (1) • Synovial (1) • Hinge joint (1) • Ball and socket joint (1) 	2

Question Number	Answer	Mark
2c)	<p>Award up to 3 marks.</p> <ul style="list-style-type: none"> • Epidermis (1) • Dermis (1) • Subcutaneous layer (1) • Hypodermis (1) 	3

Question Number	Answer	Mark
2d)	<ul style="list-style-type: none"> • Tendons attach muscles to structures whereas ligaments move the bone or structure (1) • Ligaments attach bone to bone whereas tendons attach muscle to bone. (1) 	2

Question Number	Answer	Mark
3a)	A- vas deferens (1) B- urethra (1)	2

Question Number	Answer	Mark
3b)	Award 1 mark for identification and 1 mark for function for each hormone. 1. follicle stimulating hormone (1) stimulates the production of androgen binding protein (1) and formation of blood-testis barrier (1) 2. testosterone (1) development of male reproductive tissues - testis and prostate (1) promoting secondary sexual characteristics such as increased muscle and bone mass (1) stimulates sertoli cells to produce inhibin	4

Question Number	Answer	Mark
3c)	cytoplasm (1)	1

Question Number	Answer	Mark
3d)	Contains majority of cell's genetic material (1) DNA molecules and a variety of proteins form chromosomes (1) nucleus controlling cell function (1) allowing expression of genes for protein production (1) Accept similar wording. Award up to 2 marks	2

Question Number	Answer	Mark
4a)	<p>Award 1 mark for identification and 3 marks for expansion up to a maximum of 4 marks.</p> <p>Repair and maintenance of body tissue (1) Puppies growing and developing new tissues and proteins (1) Hormones - creation of some hormones (1) development of the placenta and associated structures (1) protein needed for milk production (1)</p> <p>Learners must combine their knowledge of the role of protein in the diet with specific stages of pregnancy, eg, lactation. The mark scheme seems to require general answers but learners may give "hormone specific" responses e.g. the role of oxytocin in stimulating uterine contractions.</p>	4

Question Number	Answer	Mark
4bi)	<p>Award 1 mark for identification and 1 for explanation.</p> <ul style="list-style-type: none"> • Flat teeth (1) designed to grind (1) • Plant matter tough (1) so teeth continually grow (1) • Upper and lower incisors (1) grab /nibble (1) • premolars/molars/hard dental pad (1) crush (1) <p>Accept any other appropriate alternatives/wording.</p>	2

Question Number	Answer	Mark
4bii)	<ul style="list-style-type: none"> • Incisor teeth sharp (1) to cut meat from bones of prey (1) • Large canine teeth (1) to rip their prey (1) <p>Accept any other appropriate wording.</p>	2

Question Number	Answer	Mark
4c)	<p>Secretes pancreatic juice (1) which contains digestive enzymes that pass into the small intestine (1).</p> <p>Production of buffers (1) neutralise stomach acid in the duodenum/small intestines (1).</p> <p>Secretes insulin (1) to control blood sugar levels (1).</p>	2

Question Number	Indicative content	Mark
4d)	<p>Mechanical digestion in the mouth with cutting and grinding plant material continues with peristalsis down the oesophagus and through the digestive tract.</p> <p>Chemical digestion in stomach by acid and enzymes; pepsin which helps to break down proteins. Small intestine (duodenum) site of most digestion.</p> <p>A variety of enzymes (proteolytic, lipolytic and amylolytic) secreted to break down the food. Buffers are secreted from pancreas to increase pH level to make neutral</p> <p>Rabbits are hindgut fermenters using coprophagia further mechanical and chemical digestion</p>	8

Mark scheme (Award up to 8 marks) Refer to the guidance on the cover of this document for how to apply Levels Based Mark Schemes*.

Level	Mark	Descriptor
Level 0	0	No rewardable material.
Level 1	1-2	Demonstrates isolated elements of knowledge and understanding. Generic statements may be presented rather than linkages being made. Lines of reasoning are unsupported.
Level 2	3-5	Demonstrates mostly accurate knowledge and understanding. Answer evidences occasional linkages between the elements in the context of the question. Lines of reasoning occasionally supported through the application of relevant evidence.
Level 3	6-8	Demonstrates accurate and thorough knowledge and understanding. Answer evidences comprehensive linkages between the elements in the context of the question. Lines of reasoning supported throughout by sustained application of relevant evidence.

Question Number	Answer	Mark
5a)	<p>Award up to 1 mark</p> <ul style="list-style-type: none"> • Opens to increase blood pressure (1) • Allows movement of blood from atrium to ventricle (1) • Prevents backflow (1) 	1

Question Number	Answer	Mark
5b)	<p>Killer T-cells find and destroy infected cells. (1)</p> <p>Helper T-cells identifies foreign/trigger the immune response. (1)</p>	2

Question Number	Answer	Mark
5c)	<p>Award up to 2 marks</p> <p>Lymphatic vessels/duct (1) Lymph nodes (1) Thymus (1) Spleen (1) Tonsils (1) Bone marrow (1)</p>	2

Question Number	Answer	Mark
5d)	<p>Award 1 mark per identification and 3 per explanation or award up to 2 marks for identification and up to 2 marks for 2 expansion points.</p> <p>First line of defence against disease (1). Vessels and nodes transport and filter lymph fluid (1) containing antibodies and lymphocytes (good) and bacteria (bad) (1)</p> <p>Transports blood cells to and from the lymph nodes into the bones. (1) supports the immune response (1) swelling as a response to damage/histamine (1)</p> <p>Accept similar wording.</p>	4

Question Number	Answer	Mark
5e)	<p>Award up to 2 marks</p> <ul style="list-style-type: none"> • Allows higher blood pressure in the somatic blood supply (1) • Greater flow of blood to the tissues (1) • Allows a larger surface area in the lungs (1) • Allows lower pressure in lungs (higher pressure could cause damage to capillaries) (1) 	2

Question Number	Answer	Mark
5f)	<p>Foetal haemoglobin has a greater affinity for oxygen(1) which means the foetus can use maternal oxygen (1)</p> <p>Foetus has better access to oxygen (1) from mother's blood stream (1)</p> <p>Higher concentration gradients of oxygen in foetal/maternal blood (1)</p> <p>The disassociation curve is to the left of the adult curve (1) so the foetal haemoglobin takes oxygen from the adult haemoglobin (1)</p> <p>Accept similar wording.</p>	4

Question Number	Answer	Mark
6a)	<p>Award 1 mark per identification and 3 per explanation or award up to 2 marks for identification and up to 2 marks for 2 expansion points. To a total of 4</p> <p>Relaxation of smooth muscle cells in arteries (1) causes an increase in blood flow (1).</p> <p>Blood vessels dilate (1) blood flow increases due to decrease in vascular resistance (1).</p> <p>More warm blood at the skin surface (1) this leads to increased heat loss/reduce body temperature (1)</p> <p>Greater volume of blood at the surface (1) leads to an to sweating (1)</p> <p>Movement of blood into the arteriol (1) leads to a decrease in arterial blood pressure (1)</p> <p>Accept any appropriate alternatives.</p>	4

Question Number	Answer	Mark
6b)	<p>Award 1 mark for each up to a total of 2 marks.</p> <p>Symptom: Shivering Cold Loss of concentration/consciousness Confusion Dizziness Dilated pupils Slowed breathing Poor coordination Blood retained in the core/vasoconstriction</p> <p>Do not accept answer specific to humans</p>	2

Question Number	Answer	Mark
6c)	<p>Award 1 mark for each up to a total of 2 marks.</p> <p>Symptom: Fatigue Heat exhaustion Vomiting in some animals Muscle cramps Dehydration Sweating Burst blood vessel Panting</p> <p>Do not accept answer that are only specific to humans</p>	2

Question Number	Answer	Mark
7a)	<p>Award up to 3 marks.</p> <p>Sweating (1) leads to removal of water from body (1) and removal of urea (1) evaporation (1) osmoregulation (1)</p>	3

Question Number	Indicative Content	Mark
7b)	<p>Award 1 mark for identification and 2 marks for expansion.</p> <p>Sweating/panting (1) leads to evaporative cooling (1) thus reducing higher body temperature (1)</p> <p>Vasodilation increases blood supply to the surface (1) allowing diffusion of heat (1) made more efficient by counter current (1)</p> <p>Shivering (1) increases the metabolic rate (1) produces heat that raises body temperature (1)</p> <p>Thermoregulation (1) via hypothalamus (1) negative feedback (1)</p> <p>Piloerection (1) traps in hair/furs which insulates (1) preventing heat loss (1)</p> <p>Award up to three marks.</p> <p>Accept any other appropriate alternative answer.</p>	3

Question Number	Indicative Content	Mark
7c)	<p>U-shaped portion of the tubule that conducts urine.</p> <p>Recovery of water and sodium chloride from the urine.</p> <p>Allows production of urine that is more concentrated than blood.</p> <p>Reduces amount of water needed for survival. Highly efficient loops of Henle in environments such as the desert.</p>	8

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