



Mark Scheme (Results)

Series: 2001

Pearson BTEC Level 3 – Animal
Management

Unit 1: Animal Breeding and Genetics

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Question Number	Answer	Mark
1a	<p>Award one mark for any of the following up to a maximum of two marks:</p> <ul style="list-style-type: none"> • Vocalisation/hearing • Sight <p>Accept any other valid response.</p>	2

Question Number	Answer	Mark
1b	<p>Award one mark for identification and one additional mark for appropriate expansion.</p> <p>Female Incubates eggs (1) Sits on young (1) Ensures constant temperature (1)</p> <p>Male Feeds female (1) Feeds young (1)</p> <p>Accept any other valid response.</p>	2

Question Number	Answer	Mark
1c	<p>Award one mark for the identification and one additional mark for the appropriate expansion, up to a maximum of four marks.</p> <p>Wrap in a towel (1) to prevent wings flapping (1).</p> <p>Teach to 'step up' (1) to reduce stress (1).</p> <p>Hold the head from the back (1) to prevent injury to the neck (1).</p> <p>Handle in an enclosed place (1) to reduce injury from escape attempts (1).</p> <p>Accept any other valid response.</p>	4

Question Number	Answer	Mark
2a	<p>Award one mark for the identification and one additional mark for the appropriate expansion, up to a maximum of four marks.</p> <p>For the pet trade (1) to produce animals for sale (1). Conservation (1) to reintroduce into the wild (1). Endangered species (1) to increase numbers (1).</p> <p>Accept any other valid response.</p>	4

Question number	Indicative content	
2b	<p>Answers will be credited according to the learner's demonstration of knowledge and understanding of the material using the indicative content and levels descriptors below. The indicative content that follows is not prescriptive.</p> <p>Answers may cover some/all of the indicative content but should be rewarded for other relevant answers.</p> <p>Answers will consider all the factors that need to be covered when assessing parrot species for their suitability.</p> <ul style="list-style-type: none"> • Diet/nutritional requirements • Housing needs (especially space required) • Temperament (including aggression/tendency to bite) • Sociability/need for avian companions. • Size • Ability to 'talk' • Lifespan • Trainability • Ease of care • Good health Recommendations on suitability 	
<p>Mark scheme (award up to 6 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes*.</p>		
Level	Mark	Descriptor
Level 0	0	No rewardable material.
Level 1	1-4	<ul style="list-style-type: none"> • Demonstrates isolated elements of knowledge and understanding. • Presented in an unstructured format. • Limited reference to relevant evidence linked to the assessment. • A recommendation may be presented, but will lack focus and be superficial and underdeveloped.
Level	Mark	Descriptor
Level 2	5-8	<ul style="list-style-type: none"> • Demonstrates mostly accurate knowledge and understanding. There is some structure to the response. • The answer is mostly supported through the application of relevant evidence drawn from the assessment and wider research. • Recommendation will be mostly focused and developed and show some linkages and lines of reasoning.
Level 3	9-12	<ul style="list-style-type: none"> • Demonstrates accurate and thorough knowledge and understanding. • Presented in a clear and logical format. • Answer is fully supported throughout by sustained application of relevant evidence drawn directly from the assessment and wider independent research. • Recommendation will be clear, concise and well developed showing comprehensive linkages and lines of reasoning.

Question Number	Answer	Mark																																				
3a	<p>1 mark for correct male genotype/gametes (1)</p> <p>1 mark for correct female genotype/gametes (1)</p> <p>1 mark for each correct line (4)</p> <p>1 mark for correct probability (1)</p> <p>1 mark for correct identification of potential phenotypic probability (1)</p> <p>For a total of 8 marks.</p> <table border="1"> <tr> <td></td> <td colspan="5">Female gametes</td> </tr> <tr> <td>Male gametes</td> <td></td> <td>DY</td> <td>Dy</td> <td>dY</td> <td>dy</td> </tr> <tr> <td></td> <td>DY</td> <td>DDYY</td> <td>DDYy</td> <td>DdYY</td> <td>DdYy</td> </tr> <tr> <td></td> <td>Dy</td> <td>DDYy</td> <td>DDyy</td> <td>DdYy</td> <td>Ddyy</td> </tr> <tr> <td></td> <td>dY</td> <td>DdYY</td> <td>DdYy</td> <td>ddYY</td> <td>ddYy</td> </tr> <tr> <td></td> <td>Dy</td> <td>DdYy</td> <td>Ddyy</td> <td>ddYy</td> <td>ddyy</td> </tr> </table> <p>(male/female labels may be swapped around)</p> <p>All green 2 green 2 blue 2 green 2 yellow 1 green, 1 blue, 1 yellow, 1 albino</p> <p>Probability 9:3:3:1 green; blue; yellow; albino.</p>		Female gametes					Male gametes		DY	Dy	dY	dy		DY	DDYY	DDYy	DdYY	DdYy		Dy	DDYy	DDyy	DdYy	Ddyy		dY	DdYY	DdYy	ddYY	ddYy		Dy	DdYy	Ddyy	ddYy	ddyy	8
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	Dy	DdYy	Ddyy	ddYy	ddyy																																	

Question Number	Answer	Mark
3b	<p>Award one mark for the identification and one additional mark for the appropriate expansion, up to a maximum of four marks.</p> <p>Law of segregation (1) only one version/allele can be inherited (1).</p> <p>Law of independent assortment (1) different genes are inherited separately (1).</p> <p>Law of dominance (1) some alleles are dominant over others and will be expressed (1).</p> <p>Accept any other appropriate wording.</p>	4

Question Number	Answer	Mark
4a	<p>Award one mark for the identification and one additional mark for the appropriate expansion, up to a maximum of six marks.</p> <p>Correct temperature (1) so embryo does not die (1).</p> <p>Correct humidity (1) to prevent dehydration of the embryo (1).</p> <p>Regular turning (1) to prevent adhesion (1).</p> <p>Ventilation (1) to allow gas exchange/oxygen in/carbon dioxide out (1)</p> <p>Accept any other appropriate wording/response.</p>	6

Question Number	Answer	Mark
4b	<p>Award one mark for the identification and one additional mark for the appropriate expansion, up to a maximum of four marks.</p> <p>Skin colour (1) to indicate healthy circulation (1).</p> <p>Plumpness/head proportion (1) can indicate malnourishment (1).</p> <p>Crop (1) to prevent lumps of food forming (1).</p> <p>Leg deformities (1) indicating genetic disorder/incorrect substrate (1).</p> <p>Level of alertness (1) indicating health issues (1).</p> <p>Accept any other valid response.</p>	4

Question Number	Answer	Mark
4c	<p>Award one mark for identification and one additional mark for appropriate expansion.</p> <p>To develop a bond with humans (1) so makes a better pet (1).</p> <p>As parents have rejected it (1) so needs extra care (1).</p> <p>There are too many chicks (1) and they are not all getting fed (1).</p> <p>Accept any other valid response.</p>	2

Question Number	Answer	Mark
4d	<p>Award one mark for identification and one additional mark for appropriate expansion.</p> <p>Infection (1) by bacteria/virus (1).</p> <p>Stress (1) from poor environment/housing (1).</p> <p>Neglect (1) due to poor parenting (1).</p> <p>Malnutrition (1) from inappropriate food (1).</p> <p>Accept any other valid response.</p>	4

Question Number	Answer	Mark
5a	<p>Award one mark for identification/description and one additional mark for further appropriate description, up to a maximum of six marks.</p> <p>Lethal alleles (1) homozygous pairs kill the embryo (1).</p> <p>Incomplete dominance (1) heterozygous pair shows some/not all of the characteristic (1).</p> <p>Co-dominance (1) neither allele is dominant over the other (1).</p> <p>Multiple alleles (1) there are many versions of the genes (1).</p> <p>Epistatic effects (1) different genes affect the same phenotype (1).</p> <p>Sex linkage (1) gene is found on a sex chromosome. (1).</p> <p>Accept any other appropriate wording and specific examples.</p>	6

Question Number	Answer	Mark
5b	<p>Award one mark for any of the following up to a maximum of four marks.</p> <ul style="list-style-type: none"> • DNA markers/extraction • Gel electrophoresis • Recombinant DNA technology • Restriction enzymes • Use of vectors/transduction/transfection • Marker genes • Polymerase chain reaction (PCR) • Knockout mice • Cloning <p>Accept any other appropriate wording.</p>	4

Question number	Indicative content
6a	<p>Answers will be credited according to the learner's demonstration of knowledge and understanding of the material using the indicative content and levels descriptors below. The indicative content that follows is not prescriptive.</p> <p>Answers may cover some/all of the indicative content but should be rewarded for other relevant answers.</p> <p>Answers will consider all the factors that need to be covered when assessing parrot species for their suitability.</p> <p>The examples used may be, but do not have to be, linked to parrots.</p> <p>The reasons for breeding and how these affect the selection of breeding stock</p> <p>Economies and value of breeding stock/offspring</p> <p>Evaluation of available breeding stock including</p> <ul style="list-style-type: none"> • physical factors, e.g. beak, eyes, feather colour, cloaca, feet, limbs, • age • incubation requirements, frequency of egg laying • behaviour and temperament • previous history, e.g. maternal care, successful incubation • desired outcomes/aims of the breeder, e.g. need for appropriate temperament • potential for inherited conditions/awareness of pedigree

Mark scheme (award up to 6 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	<ul style="list-style-type: none"> • Demonstrates isolated elements of knowledge and understanding presented in an unstructured format. • Generic statements may be presented rather than linkages being made so that lines of reasoning are unclear or rarely supported through the application of relevant evidence from the context. • Displays a limited awareness of benefits or drawbacks leading to an evaluation that is superficial, focuses on only one element and therefore judgement is limited.
Level	Mark	Descriptor
Level 2	3-4	<ul style="list-style-type: none"> • Demonstrates mostly accurate knowledge and understanding. There is some structure to the response. • Some occasional linkages present so that lines of reasoning are mostly clear and partially supported through the application of relevant evidence from the context. • Displays an awareness of both benefits and drawbacks leading to an evaluation although there is an imbalance with one element more heavily present therefore judgement is partially developed.
Level 3	5-6	<ul style="list-style-type: none"> • Demonstrates accurate and thorough knowledge and understanding presented in a clear and logical format. • Comprehensive linkages evidenced so that lines of reasoning are clear and concise and well supported throughout by sustained application of relevant evidence from the context. • Displays a thorough awareness of both benefits and drawbacks leading to a well-balanced evaluation therefore judgement is well developed.

Question number	Indicative content
6b	<p>Answers will be credited according to the learner's demonstration of knowledge and understanding of the material using the indicative content and levels descriptors below. The indicative content that follows is not prescriptive. Answers may cover some/all of the indicative content but should be rewarded for other relevant answers.</p> <ul style="list-style-type: none">• 'Desirable' characteristics may have health implications for the animal• Intensive selection can result in inbreeding, which has health implications due to the expression of homozygous recessive alleles• Intensive selection can involve father/daughter mating, which some people can find unethical• Culling of animals with 'undesirable' or not the desirable characteristics can result in the killing of healthy animals• The loss of genetic diversity can cause health problems within the population later• Fertility management of breeding stock can be considered unethical• Overuse of, particularly, females can lead to individual health problems• Use of reproductive technologies such as DNA screening can be perceived as unnecessarily invasive

Mark scheme (award up to 12 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	1-4	<ul style="list-style-type: none"> • Demonstrates isolated elements of knowledge and understanding presented in an unstructured format. • Generic statements may be presented rather than linkages being made so that lines of reasoning are unclear. • Discussion is superficial rarely supported through the application of relevant evidence from the context.
Level 2	5-8	<ul style="list-style-type: none"> • Demonstrates mostly accurate knowledge and understanding. There is some structure to the response. • Some occasional linkages present so that lines of reasoning are partially supported and mostly clear. • Discussion is partially developed occasionally supported through the application of relevant evidence from the context.
Level 3	9-12	<ul style="list-style-type: none"> • Demonstrates accurate and thorough knowledge and understanding presented in a clear and logical format. • Comprehensive linkages evidenced so that lines of reasoning are well supported, clear and concise. • Displays a well-developed and logical discussion supported throughout by sustained application of relevant evidence from the context.

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