Assessment Schedule – 2006

Biology: Describe genetic variation and change (90459)

Assessment Schedule

Q	Achievement	Achievement with Merit	Achievement with Excellence
1(a)	Diagram of gametes correct, eg: d d D D | | | | R r R r **OR** accept 3 correct **OR** the 2 recombinants (the middle two).		
(b)	Recognises that crossing over increases variation / new combinations of genes / alleles / genetic diversity.	Gives a **reason** for crossing over being an advantage, ONE of: • increases chance of population survival **OR** • adapts to different lifestyles **OR** • won't be wiped out by disease **OR** • variation for natural selection to act on.	
2(a)	Describes how new genes occur in a population, eg mutation / change in DNA passed on in gametes.		
2(b)	• AaDd must be written for genotype • *Spangle*, *Dutch* (*Pied*) (need both spangle and dutch) for phenotype.		
2(c)(i)	Genotype correct Aadd / ddAa Must have both pairs of alleles.		
2(c)(ii)	Description recognises one of • offspring *Saddleback* (and *Spangle*) • must be *Danish pied* : relate to dd.	Must relate the offspring phenotypes with regard to dominant and recessive alleles of both genes: • *Danish (Pied)* is (homozygous) recessive / dd, **AND** • *Spangle* is heterozygous / Aa: because offspring are *Saddlebacks* (II-4, II-5 and II-6), (and *Spangle* (II-1, II-2)).	

2(d)	*saddleback/danish (pied)* **OR** any *saddleback* Description identifies the individual (could be male or female), one from 11 possibilities: I-1, II-4,5,6, III-3,5,6,9, IV-5,6,8 **OR** Test cross to see if budgie is heterozygous/homozygous.	Identifies one aspect of genotype: Cross determines if • Heterozygous Aa genotype will be (*spangle* and) *saddleback* offspring. **OR** • Homozygous AA all offspring will be *spangle.* **OR** • evidence that dd is already known for *danish.*	Full justification of selection by all three: • Heterozygous Aa • Homozygous AA • evidence that dd is already known for *danish.* (For A,M and E: an arrow shows link of 'the individual' to the discussion as there is one grade for this question).
3	Describes what is happening in A→B and B→C **OR** Recognition not all killed by spray.	Explains either Why numbers do not drop to zero at B (the idea of variation in species/genes/alleles, eg variation in species exists/ possess a mutation/or a mutation occurs before B/ are immune / are resistant **OR** Why B→C increases (resistant allele/gene already present and these individuals reproduce). (**NOTE**: accept follow on error: idea that acquired immunity can be passed on to offspring.)	Both from MERIT. (An explanation beyond C on graph is not required.)
4(a)	Definition of gene pool, eg gene pool – **all** the genes/alleles in a population/species.		
4(b)	Name the process – • bottleneck effect, **OR** • reduced gene pool **OR** • small gene pool **OR** • reduced genetic variation.	Explain the risk of small gene pool: • Lack of variation to offspring **OR** • Risk of environmental change or example of.	Links all three: • small gene pool • lack of variation in offspring • risk of environmental change or example of.

Judgement Statement

Biology: Describe genetic variation and change (90459)

Achievement	Achievement with Merit	Achievement with Excellence
FIVE questions answered correctly. Minimum 5 × A	SEVEN questions answered correctly, including at least THREE at Merit level. Minimum 3 × M + 4 × A	EIGHT questions answered correctly, including at least TWO at Merit level and at least TWO at Excellence level. Minimum 2 × E + 2 × M + 4 × A