Assessment Schedule – 2007

Biology: Describe processes and patterns of evolution (90717)

Evidence Statement

Q	Achievement	Achievement with Merit	Achievement with Excellence
1(a)	Description of coevolution recognises there will be a mutualistic relationship /benefit to both the bat and food plant to ensure reproductive success.		
1(b)	Defines the key concepts in the operation of Natural Selection: – there is variation in the species, individuals with longer tongues can gain more food and be reproductively successful -individuals with longer tongues leave more offspring.	Explains that flower (corolla depth) and bat (tongue length) would evolve together • Bats with longer tongues get more food energy and have greater reproductive success. Deep flowers provide food for bats and ensure successful pollination or reduced predation from other species.	
1(c)	Defines adaptive radiation as a new species evolving from a common ancestor to exploit newly available niches with new adaptations.	Explains the impact of specific geological history. • Glaciers or mountain building splitting populations into smaller groups. OR • The exposure to different selection pressures e.g. as East and West differentiate due to mountain building.	Evaluation of reproductive isolation is discussed with reference to the way that species reproductive isolation or genetic differences are maintained for those species using pre or post-zygotic mechanisms to justify the outcome.
1(d)	Identifies that the separated populations of this species are the start of the speciation due to poor gene flow.	Explains that the two distinct populations may become reproductively isolated via physical separation (allopatry) or niche differentiation (sympatry) to become two new species.	

Question	Achievement	Achievement with Merit	Achievement with Excellence
2(a)	Identifies that the different *Libertia* species have evolved through a series of polyploidy events thus doubling chromosome numbers.		
2(b)	Recognises that *L. paniculata* has a multiple diploid chromosome number .	Explains that failure of homologues to separate (nondisjuction) in meiosis has effected 2n gametes and that fusion of 2n gametes has produced 4 n offspring OR Amphiploidy following fertilisation has formed 4n individuals.	
2(c)	Recognises that *L. peregrinans* has been formed by gametes having multiple sets of chromosomes.	Explains that *L. peregrinans* has evolved through a series of polyploidy events as demonstrated by the artificial hybrids between *L. ixioides* and *L.grandiflora*.	
2(d)	Describes adaptive radiation As a new species of Indigo bird that has evolved from a common ancestor and defines punctuated equilibrium as new Indigo birds species evolving in a short space of time following a period of stasis.	Reasons are given for the indigobirds showing high species diversity (adaptive radiation) that their rapid development occurred in response to the increase in Finch species and thus increase in new niches (to parasitise). Data from the diagram is used or referred to.	
2(e)	Defines sympatric speciation as New species evolving in the same geographic area due to niche differentiation or reproductive isolation due to host finch song recognition.	Explains that new Indigo bird species have formed and remain reproductively isolated due to differences in song or courtship behaviour learned from the Finch host species.	Relates the initiation of a new Indigo bird species to evidence of a new song of a new host which will then be imprinted on the young of indigo birds that have parasitised this new host. Evaluates reproductive isolation by linking the new courtship behaviour as specific, in that it mimics the new host.

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
FIVE questions answered correctly. Minimum 5 × A	SEVEN questions answered correctly, including at least FOUR at Merit level. Minimum 4 × M + 3 × A	SEVEN questions answered correctly, including at least FOUR at Merit level and at least ONE at Excellence level. 1 × E + 4 × M + 2 × A