Assessment Schedule – 2005

Biology: Describe concepts and processes relating to ecology (90461)

Evidence Statement

Question	Achievement	Achievement with Merit	Achievement with Excellence
1(a)	Succession		
1(b)	**Description shows possible effect on pingao** • Inter-specific competition / competition occurs. • Pingao colonises less quickly than marram. Not • Marram population will increase. • The pingao will adapt. *Candidate Exemplars* • *Marram grass competes with Pingao.* • *Pingao will have less space to grow.* • *Pingao population will decrease.*	**Reason for effect on pingao.** *Effect is linked to a concept* • Marram grass has adaptations which allow it to colonise more quickly than Pingao. This will reduce the available habitat for pingao. • Inter-specific competition because they have similar niches. (If Gause's Principle stated it must be described.) *Candidate Exemplars* • *Only one species can occupy an ecological niche and because Marram has better adaptations, pingao will eventually disappear.* • *There is inter-specific competition which means the pingao will decrease because its habitat has.* • *They will be competing for the same resources which will slow the growth of the pingao.*	
1(c)	**Description of THREE aspects of ecological niche** **Habitat:** in and amongst sedges on sandy shore. **Feeding level:** herbivorous **Adaptations:** burrows during day to avoid temperature extremes and/or exoskeleton to avoid desiccation. **Life history:** eggs laid beside food source. *A rewrite only of the information given not acceptable.*		

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1(d)	**A description of ONE behavioural adaptation.** Behavioural adaptations: Eg • nocturnal • burrows into sand during day • eggs laid beside roots • eggs laid singly.	**Reason why the behaviour enables the scarab beetle to survive.** Eg • more difficult to see at night • avoids day predators • food available immediately after hatching. • conservation of water. *Candidate Exemplars* • *avoids eggs being eaten by predators* • *prevents eggs from being blown away* • *escape the heat of the day* • *prevent drying out during day time.*	
2(a)	**The name and description of TWO different inter-specific relationships involving the mistletoe.** Eg • semi-parasitic / parasitic commensalisms *(Mistletoe) and host* • mutualism (accept symbiosis) : *(Mistletoe) and native birds / bee* • parasitism (exploitation) : *Mistletoe and insect galls.* **OR** **The name and description of ONE inter-specific relationship AND a related explanation in 2b.**		
2(b)		**Reason as to how the mistletoe is affected by the other species. TWO required** Eg • Mistletoe and host : mistletoe gets nutrients and water to enhance growth / reproduction productivity. • Mistletoe and native birds / bees: flowers pollinated to ensure seeds produced / new plant. • Mistletoe and gall insect: may lose some nutrients and water. *Candidate Exemplars* • *If no native birds and introduced birds do not learn how to open flowers then there is no pollination and no seeds.*	

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2(c)	**Description of biodiversity effect given.** 'Biodiversity' can be at the level of: Species / habitat / genetic. Answer must be in terms of the consequence of the disappearance of mistletoe at one of these levels. • Biodiversity decreases Or implied by examples in candidate answer. *NOT* *Biodiversity decreases because of extinction* – too global.	**Reason why biodiversity affected** *Note: the mistletoe has disappeared.* Eg • Leads to a decrease in range of resources, increasing competition. • Species move out of the area because insufficient food. • Decrease in range of habitat, increasing competition / emigration / loss of species. *The word 'extinction' should qualified with 'in that area / locally. Use the context.* *Candidate exemplars* • *No mistletoe = no habitat for parasitic insects therefore less biodiversity.* • *Native birds lose a food source and if there is no alternative food source available they will disappear.*	**Discussion linking ideas to the change in biodiversity. Answers well developed.** Disappearance of mistletoe will alter the ecosystem of native plants and animals that have a direct or indirect relationship with it. Examples of linked ideas could be: • Dependence on mistletoe sufficient to cause species to move to areas where it can be found *Linked to* Any organism dependent on emigrating species will also be affected • Gall insects unable to establish on another host and therefore die out. *Linked to* Any possible organism dependent on gall insect will be equally affected.
	Description of how energy enters the food chain. 'Capturing' of suns energy for photosynthesis by phytoplankton. ***Both*** *photosynthesis* ***and*** *phytoplankton required.*		
3(b)	**Accounts for loss of carbon.** Eg • Carbon lost at each step as carbon dioxide. • Carbon lost at each step in respiration. • Carbon lost in organic waste (death / faeces / urine). *Candidate exemplar* • *Some of carbon used in respiration* • *Organisms use carbon in respiration for maintenance and/or excrete it as carbon dioxide.*	**Reason why the amount of carbon transferred through trophic level decreases.** Eg Carbon lost at a particular level through death / waste / respiration *is not available for transfer to next level.* Therefore candidate must explain how the progression of this through the trophic levels reduces the available carbon.	

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3(c)	**Description of TWO changes** Eg • Less food alternatives / sources • Seabirds decrease. • Phytoplankton and zooplankton decrease. • Fish increase. *Candidate Exemplars* • *Mammals decrease.* • *Macro-zooplankton increase.* • *Seabirds and mammals will not have as much variation in their diet.*	**Reason for TWO changes** Candidate explanation must be supported by evidence in diagram Eg • Because the squid is a food source for the seabirds. • Phytoplankton and zooplankton decrease because consumed by an increased Macro-zooplankton population. • Fish numbers increase because not consumed by squid. May give two changes and identify same reason for both.	**Discussion shows at least TWO interrelationships between organisms in the food web.** For each change at least one implication is identified elsewhere in the food web with specific reference to organism name and /or biomass transferred. Increased squid caught means: • Squid constitutes one third of the seabirds intake *so* seabirds will increase intake of fish / macro-zooplankton. • Initially macro-zooplankton increase but offset by increased fish pop. and / or increased seabird consumption.

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
FOUR opportunities answered at Achievement level or above. 4 × A	FIVE opportunities answered. THREE at Merit *and* TWO at Achievement level or above. 3 × M + 2 × A	FIVE opportunities answered. ONE at Excellence *and* TWO at Merit *and* TWO at Achievement level or above. 1 × E + 2 × M + 2 × A