Question Number	Answer	Additional guidance	Mark
1(a)(i)	the number of species in { an area / habitat / eq } ;		**(1)**

Question Number	Answer	Additional guidance	Mark
1(a)(ii)	idea of reduction in species richness ;		**(1)**

Question Number	Answer	Additional guidance	Mark
1(b)	idea that the plant was found in only one site (in the wild) ;		**(1)**

Question Number	Answer		Mark
1(c)(i)	1. from different plants / eq ; 2. to provide genetic variation / eq ; 3. X-rayed ; 4. to check for { viability / viable embryos / eq } ;	1. ACCEPT large size of seed	**(3)**

Question Number	Answer	Additional guidance	Mark
1(c)(ii)	1. dry and cold ; AND any two of the following: 2. to {prevent/reduce} enzyme activity ; 3. to prevent germination of seeds ; 4. to prevent microbial growth / decay/decomposition of seeds ;	IGNORE references to light and low oxygen, ACCEPT low humidity	**(3)**

Question Number	Answer	Additional Comments	Mark
2 (a)	QWC – Spelling of technical terms must be correct and the answer must be organised in a logical sequence) 1. idea that 18 individuals is a small population / small gene pool / low genetic diversity / may have been closely related / eq ; 2. captive breeding will increase population ; 3. studbooks /records kept of breeding programme / eq ; 4. (zoos) select mates ; 5. inter-zoo exchange of animals for breeding / eq ; 6. idea of the need to prevent inbreeding ; 7. idea of avoiding genetic drift ; 8. use of { IVF / AI / use of surrogates } ; 9. process for measuring genetic diversity described, e.g. DNA profiling / eq ;	QWC emphasis is clarity of expression ACCEPT reference to 'species' instead of ferret which may arise due to the wording of question. 4. ust refer to human intervention – not just the ferrets choosing their mates 6. NOT 'interbreeding' in place of 'inbreeding'. ACCEPT 'encourage outbreeding' e.g. ferrets not mated with closely related ferrets	**(5)**

Question Number	Answer	Additional Comments	Mark
2 (b)(i)	1. (captive) population not large enough / number of births is low / eq ; 2. individuals not mature enough / eq ; 3. zoos preparing ferrets for release / eq ; 4. idea of maintaining a population in zoos ;		**(2)**

Question Number	Answer	Additional Comments	Mark
2 (b)(ii)	1. number of <u>births</u> is rising / eq ; 2. increase in population : 3. idea that more are born than are released e.g. at least 200 births each year ; 4. identification of years when number of <u>births</u> fell, i.e. 1994 or 2000 ; 5. correct manipulation of data ;	3. Or some understanding that the increases outweigh the decreases, e.g. between 1991-1999 it increased by 230, but only fell by 170 to 2000 from 1999 5. Some examples are shown below	**(2)**

Year	Difference	%
1991-2000 – mp3	*(220-280) 60*	*(+) 27 / 27.3*
1991- 1999	(220-450) 230	(+) 105 / 104.5
1999-2000	(450-280) 170	(-) 38 / 37.8

Question Number	Answer	Additional Comments	Mark
2 (c)		Factors provided may either improve or reduce survival chances	
	1. idea of habitat as a factor, e.g. loss of habitat / wider range of habitats / eq ;	1. climate change n be accepted here as a factor affecting availability of suitable habitat	
	2. availability of { prey / food / prairie dogs /eq } ;	ACCEPT description of human activity that could lead to loss or gain of habitat	
	3. competition with other ferrets (for resources) ;	3. Intrasp ific competition	
	4. competition with other species (for resources) / eq ;	4. Interspecific competiti	
	5. effect of eating { poisoned prairie dogs / poison put out for prairie dogs } / eq ;		
	6. presence of { predators / hunters } / eq ;		
	7. preparation for living in the wild improves chance of survival / if reliant on humans would not survive ;	7. e.g. kept in semi-wi conditions initially and hunting behaviour encouraged	
	8. idea of too few to be a viable breeding population ;		
	9. idea of presence of disease ;		**(3)**

Question Number	Answer	Additional Comments	Mark
3 (a)	☒ C a species found in one geographical location ;		**(1)**

Question Number	Answer	Additional Comments	Mark
3 (b)	1. idea that it is a small population, e.g. only two females ; 2. with a small gene pool / eq ; 3. and low genetic diversity / eq ; 4. reference to inbreeding problems ; 5. idea of difficulties in breeding, e.g. some may have been too old / ill / eq ;	 2. ust refer to original population. IGNORE reference to allele frequency. 3. ust refer to original population. ACCEPT low genetic variation. 4. NOT interbreeding 5. IGNOR reference to lack of attraction between individual squirrels	**(3)**

Question Number	Answer	Additional Comments	Mark
3 (c) (i)	1. Highes value as 550 and lowest value as 200 ; 2. Difference divide by 550, e.g. 350 ÷ 550 ; 3. - 63.6)% or 63.6(4)% decrease ;	ACCEPT 63.6% or 64% for 2 marks ACCEPT correct final answer for 3 marks – must refer to decrease	**(3)**

Question Number	Answer	Additional Comments	Mark
3 (c)(ii)	1. umber of middens fell / eq ; 2. (therefore) popu tion of squirrels fell ; 3. reference to slight increase in population in 2004 ;		**(2)**

Question Number	Answer	Additional Comments	Mark
3 (d)	1. population (in the wild) falling ; 2. loss of habitat as a results of fire ; 3. breeding programme will increase numbers /eq ; 4. idea that it would enable reintroduction to the wild ; 5. idea of endemic to one specific area, e.g. endangered, not found elsewhere; 6. idea of conserving species e.g. may face extinction ;		**(3)**

Question Number	Answer	Additional guidance	Mark
4(a)	1. idea of less {stress / trauma / discomfort / depressed /eq} (for the animals) ; 2. idea that animals are more likely to breed in natural environment ; 3. idea that animals may require large areas ; 4. idea that problems of releasing animals back into the wild is avoided eg habituation ; 5. idea that {disease is less likely / disease will not wipe out population} ; 6. idea of allowing (natural) {interspecific relationships / communities} to exist ; 7. idea of allowing (natural) {intraspecific relationships / family / social / eq} {structure/ behaviour} ; 8. (because) large numbers of animals needed / wider gene pool / eq ; 9. idea that (natural) {diet / food / eq} available ;	**Accept** converse argument throughout **6. Accep** reference to maintaining their niche	**(3)**

Question Number	Answer	Additional guidance	Mark
4*(b)	(QWC– Spelling of technical terms *(in italics)* must be correct) 1. reference to *succession* ; 2. reference to (*forensic) entomology* ; 3. example of {insect / eq} e.g. *fly, beetle, wasp* ; 4. idea that the {types / *species* / life cycle stages} (of insects) are used ; 5. reference to {*decomposition / decay* / eq} ; 6. idea that there are different stages of {*decomposition / decay* / eq} ; 7. detail of {*decomposition / decay* / eq} e.g. production of *gases, liquefaction* of *tissue, bloating, discolouration* ; 8. reference to rate of {*succession / insect development / decomposition*} influenced by {external factor / appropriate named factor} ; 9. idea that insect and decomposition information is used to determine time of death ;	Penalise spelling once **1. Acce** in context of either insects or decomposition **3.** Named insect must be spelt correctly **6. Accep** if 2 or more stages listed **8.** Named *factor* must be spelt correctly	**(5)**