

Question Number	Answer	Mark
1(a)	<p>Ni</p> <ol style="list-style-type: none"> 1. the {role / function / eq} (of a species / organism) ; 2. {within the community / ecosystem /habitat / environment / eq } ; <p>Species richness:</p> <ol style="list-style-type: none"> 3. number of (different) species ; 4. in a {habitat / eq } / at any one time ; 	max (3)

Question Number	Answer	Mark
*1 (b)(i)QWC	<p>(QWC - Spelling of technical terms must be correct and the answer must be organised in a logical sequence)</p> <ol style="list-style-type: none"> 1. (cheetah has) {lowest genetic diversity / least genetic variation } (of the listed cats) ; 2. correct reference to lack of adaptation / example / no selective advantage (when environment changes) ; 3. (therefore) less likely to survive / eq ; 4. (therefore) more at risk of {extinction / eq} ; 	max (3)

Question Number	Answer	Mark
1 (b)(ii)	<ol style="list-style-type: none"> 1. {greater / eq} genetic diversity (amongst the litter) / eq ; 2. greater chance that will {survive / eq} ; 3. increased chance of fertilisation / pregnancy / eq ; 4. increase in population size / eq ; 	max (2)

Question Number	Answer	Mark
1 (c)	<ol style="list-style-type: none"> 1. increases genetic diversity /eq ; 2. (because it) allows {outbreeding / mating / eq} with (genetically) different individuals / eq ; 3. stop/reduces {inbreeding / mating with parents / siblings} ; 4. (which) reduces genetic diversity / eq ; 	max (2)

Question Number	Answer	Mark
1 (d)	cheetahs that are exclusive to one continent ;	(1)

Question Number	Answer	Mark
2 (a)(i)	idea that a lower ant diversity indicates a {high copper / poor / eq } environment ;	(1)

Question Number	Answer	Mark
2 (a)(ii)	<ol style="list-style-type: none"> 1. idea that amount of vegetation affects the number of ants ; 2. idea that the amount of vegetation is affected by copper level ; 3. vegetation to copper is direct link / eq ; 	maximum (2)

Question Number	Answer	Mark
2 (b)(i)	<ol style="list-style-type: none"> 1. inhibits germination / eq ; 2. idea of slowing down {enzymes / biochemical reactions} ; 3. slows down rate of { decay / microbial activity / eq } ; 4. (therefore) prolongs seed survival / eq ; 5. idea that drying reduces freezing effect ; 	maximum (2)

Question Number	Answer	Mark
2 (b)(ii)	<ol style="list-style-type: none"> 1. idea that checking {seed viability / germination success / eq } ; 2. allows new seeds to be produced / eq ; 3. idea that stored seeds may need replacing e.g. due to decay / death ; 	maximum (2)

Question Number	Answer	Mark
2 (c)	<ol style="list-style-type: none">1. maintaining the endangered species e.g. protection from poachers/ predation ;2. (captive) breeding programmes /eq ;3. reintroduction into the wild / eq ;4. scientific research / example given / eq ;5. education / example given / eq ;	maximum (2)

Question Number	Answer	Additional Guidance	Mark
3(a)(i)	<ol style="list-style-type: none"> 1. closely-related lions mated with each other / a small gene pool / eq ; 2. reference to inbreeding depression ; 3. idea of increased chance of homozygous recessive genotypes for genetic defects ; 	<ol style="list-style-type: none"> 2. NOT interbreeding 3. NOT homologous ACCEPT recessive alleles more likely to be expressed 	(2)

Question Number	Answer	Additional Guidance	Mark
3(a)(ii)	<ol style="list-style-type: none"> 1. selection of { unrelated / genetically different } mates / eq ; 2. use of stud books / records of mating / DNA profiling / eq ; 3. exchange of animals between zoos / eq ; 4. exchange of gametes between zoos / eq ; 5. IVF / AI / eq ; 		(4)

Question Number	Answer	Additional Guidance	Mark
3(b)	<ol style="list-style-type: none"> 1. idea of { genetic cause / genetic mutations } ; 2. idea that a change in diet had no effect ; 3. reference to { monoamine oxidase (A) / MAOA } ; 4. idea of behaviour learnt from mother ; 		(2)

Question Number	Answer	Additional Guidance	Mark
4(a)	1. (gradual) increase in {average / eq} temperature ; 2. (of earth's) {surface / atmosphere} (and oceans) ;	NB IGNORE any explanations as to the cause 1 IGNORE warming	(2)

Question Number	Answer	Additional Guidance	Mark
4(b)(i)	Effects on plants: 1. { loss / eq } of (existing) species / extinction ; 2. idea of changes in distribution (of plants / species) ; 3. idea of changes in {numbers / size / growth / eq} (of plants / species) ; Explanations (max 3): 4. idea that there will be changes in rainfall patterns ; 5. idea of a change in growing seasons ; 6. idea that temperature may become too hot for some species OR credit a link made between temperature and enzyme activity ; 7. idea of increased carbon dioxide results in more {photosynthesis / GPP / NPP / biomass / eq} ; 8. idea of fall in pH in {oceans / rivers / eq} ;	NB any link to an affect must be correct 4 ACCEPT droughts 5 ACCEPT flowering times	(4)

Question Number	Answer	Additional Guidance	Mark
4(b)(ii)	1. idea of reduction of {herbivore / primary consumer} ; 2. idea that this would result in a reduction of {predator / secondary consumer / tertiary consumers} ; 3. idea that a change in {distribution / numbers / types / eq} of plants could result in a change in distribution of {herbivores / eq} ; 4. idea of loss of {habitat / eq} decreasing {breeding rate / numbers / eq} ; 5. idea of loss of {shelter / camouflage / eq} provides more food for predators so they would increase in {size / number} ;	ACCEPT converse for increase in plant {number / size / eq} 1 ACCEPT idea of loss of animals because of reduction in food supply 2 ACCEPT idea of loss of animals that feed on the herbivores 4 ACCEPT named example e.g. nesting place	(3)

Question Number	Answer	Additional Guidance	Mark
4(c)	<ol style="list-style-type: none"> 1. idea that we can only {make predictions about the future / extrapolate data / work on correlations / eq } ; 2. idea that {scientists / industry / eq} are presenting {different views / insufficient evidence / eq} about global warming ; 3. idea that some people surveyed did not {understand / know about} global warming ; 4. idea that some people do not believe in {global warming / harmful effects of global warming} because they do not want it to affect their { lifestyle / named lifestyle / eq } ; 5. idea that some people think that a solution to global warming will be found ; 6. idea that some people do not want to think about the future ; 	<p>NB just a reference to do not believe is too vague 1 ACCEPT it is due to natural cycle / normal fluctuations</p>	(3)

Question Number	Answer	Additional guidance	Mark
5(a)(i)	1. idea of (a sequence of) changes in {a community / organisms / species / plants} ; 2. over a period of time / eq ;	1. Accep the idea of species replacing or succeeding each other 2. Acce gradually	(2)

Question Number	Answer	Additional guidance	Mark
5(a)(ii)	1. idea of final {stage / sere / community} ; 2. feature of community described e.g. self-sustaining , stable, one dominant species, a few codominant species ;	1. Accep at the end of succession 2. Ignor named example	(2)

Question Number	Answer	Additional guidance	Mark
5(b)(i)	1. idea of conservation of {genetic diversity / genetic variation / biodiversity} ; 2. idea of extinction ; 3. idea of aesthetic reasons ; 4. idea that these plants may be useful e.g. as medicines ; 5. idea that other animals depend on these plants as a {source of food / habitat} ;	1. Acce gene pool 5. Acce part of a food chain Ignore survival	(2)

Question Number	Answer	Additional guidance	Mark
5(b)(ii)	grazing / remove saplings / mowing / eq ;	Accept burning	(1)

Question Number	Answer	Mark
5(c)(i)	C systematic ;	(1)

Question Number	Answer	Additional guidance	Mark
5(c)(ii)	<ol style="list-style-type: none"> 1. comparison (of the value) to the critical value indicates no significance / stronger correlation the nearer the value is to 1.0 / 0.565 is too low / eq ; 2. idea that sample size too small ; 3. idea that { there is no correlation between height and width / other factors affect height / other factors affect width / eq} ; 	<p>1. Ignor plus and minus numbers</p> <p>2. Accep not enough data</p>	(2)