

Question Number	Answer
*7(b)	<p>Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme.</p> <p>The indicative content below is not prescriptive, and candidates are not required to include all the material indicated as relevant. Additional content included in the response must be scientific and relevant.</p> <p><u>New species formation</u></p> <ul style="list-style-type: none"> • reproductive / geographical isolation • due to cichlid population being {separated / entrapped} into different lakes / isolation can occur in different habitats within same lake • recognition that Apoyo was first inhabited before Xiloá • recognition that cichlids can move between the two great lakes but not between the crater lakes • mutation causes new allele / genetic variation in original cichlid population • selection pressures different in different lakes • different alleles may give selective advantage in different lakes • fish with advantageous alleles survive, reproduce and pass these alleles onto their offspring • description of allele frequency increasing • different phenotypes developed due to different genotype • speciation first occurred in lake Apoyo / link to {long time/ 1000 years +} for first speciation to occur in lake {Apoyo / Xiloá} <p><u>Determination of 6 different species</u></p> <ul style="list-style-type: none"> • analysing phenotype similarities and differences • examples from photographs given • analysing biological molecules using molecular phylogeny e.g. DNA, RNA, proteins • details of methodology used to analyse the molecules • cichlids are different species as no longer able to breed together to produce fertile offspring • due to different {body shape / breeding behaviours etc} • discussion of how the molecular phylogeny results would support the cichlids being different species

(6)

			Additional guidance
Level 0	0	No awardable content	
Level 1	1-2	<p>Demonstrates isolated elements of biological knowledge related to the given context with generalised comments made.</p> <p>The description will contain basic information with some attempt made to link knowledge and understanding to the given context.</p>	<p>Basic description of either how the new species may have formed in these four lakes</p> <p>or</p> <p>how the scientists would have determined that these cichlids were 6 different species</p>
Level 2	3-4	<p>Demonstrates adequate knowledge by selecting and applying some relevant biological facts/concepts to provide the description being presented.</p> <p>The description shows some linkages and lines of reasoning with some structure.</p>	<p>Basic description of new species formation and determination of new species</p> <p>or</p> <p>Detailed description of new species formation</p>
Level 3	5-6	<p>Demonstrates comprehensive knowledge by selecting and applying relevant knowledge of biological facts/concepts to provide the description being presented.</p> <p>The description is clear, coherent and logically structured.</p>	<p>Detailed description of either how the new species may have formed in these four lakes</p> <p>And</p> <p>how the scientists would have determined that these cichlids were 6 different species</p>