

Question		Answer	Mark	Guidance
21	(a)	Telmatobius ✓	1	must be written with a capital T note: the spelling must be correct <b>DO NOT ALLOW</b> if species name included
	(b)	(good) solvent ✓ high specific heat (capacity) / temperature stability OR described ✓  (high) density (so frog floats / buoyant) ✓ ice is less dense than water ✓	2 max	<b>ALLOW</b> it has <u>oxygen</u> dissolved in it <b>IGNORE</b> 'high heat capacity', 'no temperature change', <b>IGNORE</b> 'specific latent heat'
	(c)	(i)		
		large / increase the, surface area / SA:Vol ratio ✓ <i>idea of:</i> increase (the rate of) oxygen absorption / described ✓  oxygen levels in the lake are low ✓	2 max	<b>ALLOW</b> 'for oxygen absorption' if mp1 given e.g. of description: 'for (more) oxygen to diffuse in (through skin)'

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	(ii)	<p><b>D</b> large surface area ✓</p> <p><b>E</b> for (maximum) <u>diffusion</u> ✓</p> <p><b>D</b> squamous, epithelium / cells OR alveolar wall, only 1 cell thick / thin ✓</p> <p><b>E</b> (providing) a short diffusion distance ✓</p> <p><b>D</b> good, blood supply / ventilation ✓</p> <p><b>E</b> maintaining / creating a (steep) concentration gradient ✓</p>	2 max	<p>Mark first <b>D</b> response or <b>E</b> response only For two marks the <b>E</b> mark must be linked to the <b>D</b> mark</p> <p><b>IGNORE</b> increase surface area, ref to SA:Vol ratio</p> <p><b>ALLOW</b> idea of more or faster diffusion</p>
(d)	(i)	<p>repeat (readings) ✓</p> <p>calculate mean ✓</p> <p>identifying anomalies ✓</p> <p>use statistical test to identify difference ✓</p>	2 max	<p>this could be mean distance/size of colourless area, or mean time if cube allowed to go completely colourless</p> <p><b>ALLOW</b> calculate standard deviation</p>

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	(ii)	cube A = 0.6 (: 1) ✓ cube B = 1.5 (: 1) ✓	2	<b>ALLOW</b> 1 mark for 600 : 1000 <b>and</b> 96 : 64 6 : 10 <b>and</b> 3 : 2 3 : 5 <b>and</b> 3 : 2 (as correct ratios but not expressed correctly) Allow these ratios if written anywhere in the answer space.  <b>DO NOT ALLOW</b> if units given
	(iii)	large(r) organism has small(er) SA : Vol ratio ✓  (rate of) diffusion (too) slow / diffusion distance (too) long ✓  for (sufficient), delivery / uptake of, oxygen / nutrients OR for (sufficient) removal of (named) waste products ✓  for, (aerobic) respiration / metabolic demands ✓	3 max	<b>ALLOW ORA</b> for first three mark points