


Question	Answer	Marks	Guidance
1 a		2	all correct = 2 marks 2 or 1 correct = 1 mark
b	<p>(inflexible) lens cannot become fat / cannot increase focal power (1)</p> <p>light/image is focused behind/not on the retina/back of the eye (1)</p>	2	<p><b>allow</b> lens remains thin/less convex/less curved</p> <p><b>allow</b> lens can't become short/thick</p> <p><b>ignore</b> lens cannot become small/large</p> <p><b>ignore</b> lens cannot change shape easily-in stem of question</p> <p><b>allow</b> light not refracted/bent enough</p>
<b>Total</b>		<b>4</b>	

Question	Answer	Marks	Guidance
2	<p><b>[Level 3]</b> Identifies Kevin's <b>and</b> Jeanette's cause <b>and</b> correction</p> <p><b>and</b> at least one reason for and one against surgery.</p> <p>Quality of written communication does not impede communication of the science at this level. (5 – 6 marks)</p> <p><b>[Level 2]</b> Identifies Kevin's <b>or</b> Jeanette's cause <b>or</b> correction</p> <p><b>and</b> at least one reason for and one against surgery.</p> <p>Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks)</p> <p><b>[Level 1]</b> Identifies Kevin's <b>or</b> Jeanette's condition <b>or</b> cause <b>or</b> correction</p> <p><b>or</b> at least one reason for <b>or</b> one against surgery.</p> <p>Quality of written communication impedes communication of the science at this level. (1 – 2 marks)</p> <p><b>[Level 0]</b> Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)</p>	6	<p><b>This question is targeted at grades up to A.</b></p> <p><b>Indicative scientific points at level 1, 2 and 3 may include:</b></p> <p><b>Cause</b></p> <ul style="list-style-type: none"> <li>• Kevin as eyeball too long or lens too fat/too refractive/not thin enough.</li> <li>• Jeanette eyeball too short or lens too thin/not refractive enough/not fat enough.</li> </ul> <p><b>Correction</b></p> <ul style="list-style-type: none"> <li>• Kevin needs concave / diverging lens for correction.</li> <li>• Jeanette needs convex/ converging lens.</li> </ul> <p><b>Reasons for</b></p> <ul style="list-style-type: none"> <li>• benefits outweigh surgery risks</li> <li>• work not hindered</li> <li>• may be sportsperson</li> <li>• weather problems of glasses</li> <li>• makes appearance better</li> <li>• no need to wear glasses</li> <li>• long-lasting remedy</li> </ul> <p><b>Reasons against</b></p> <ul style="list-style-type: none"> <li>• Valid reason for not having surgery e.g. risk of going wrong / fear/pain of operation</li> <li>• cost of surgery compared to glasses</li> <li>• may still need glasses later in life when eyes worsen</li> </ul> <p><b>Indicative scientific points at level 1 may include:</b></p> <p><b>Condition</b></p> <ul style="list-style-type: none"> <li>• Kevin is short-sighted / can only see near objects in focus</li> <li>• Jeanette is long-sighted / can only see distant objects in focus</li> </ul> <p><b>Use the L1, L2, L3 annotations in Scoris. Do not use ticks.</b></p>
	<b>Total</b>	<b>6</b>	

Question			Answer	Marks	Guidance
3	(a)	(i)	<b>too</b> rounded (1)  focuses light <b>before</b> the retina <b>or</b> bends / refracts light too much (1)	2	<b>allow too</b> powerful / <b>too</b> thick <b>ignore</b> long eyeball  <b>not</b> reflects lights
		(ii)	concave (1)	1	<b>allow</b> diverging <b>allow</b> diagram: 
	(b)	(i)	(alternative / different) version of <b>a</b> gene (1)	1	<b>ignore</b> different types of gene <b>but allow</b> different types of a gene
		(ii)	both Seema and John do not have the disorder / condition / nanophthalmos (1)  <b>(but)</b> they have children who have the disorder / condition / nanophthalmos <b>or</b> Kevin has the disorder (1)	2	<b>allow</b> Seema and John are carriers  <b>allow</b> disorder appears in children whose parents do not have it (2) <b>allow</b> the disorder skips generations (2)  <b>ignore</b> references simply to alleles, answer must refer to phenotype <b>ignore</b> idea that it is recessive because fewer people have the disorder than do not
		(iii)	parental genotypes    Nn x nn  offspring genotypes    Nn, Nn, nn, n  probability = 50(%) (1)	3	<b>allow</b> any clear genetic diagram  <b>ignore</b> ½ / 0.5 / 1 in 2  <b>do not</b> award any ecf <b>allow</b> 50(%) (1) even if diagram incorrect
<b>Total</b>				<b>9</b>	