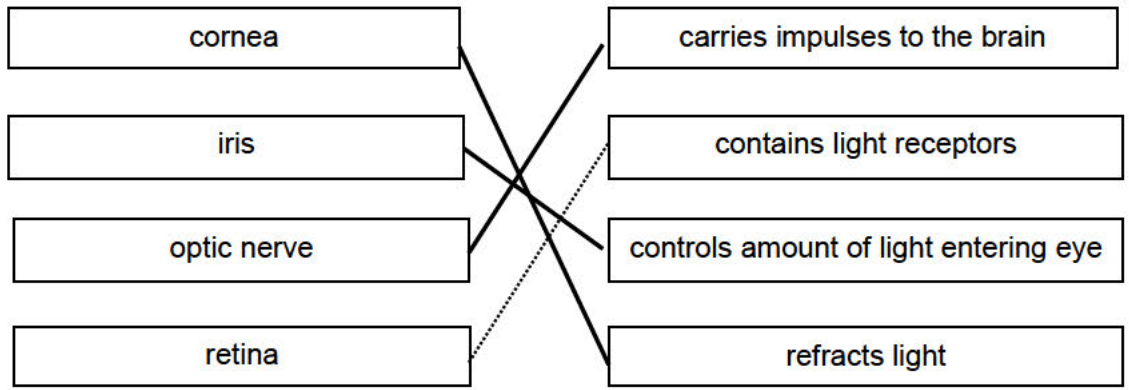
Question	Answer	Marks	Guidance
1 a		2	all correct = 2 marks 2 or 1 correct = 1 mark
b	(inflexible) lens cannot become fat / cannot increase focal power (1) light/image is focused behind/not on the retina/back of the eye (1)	2	**allow** lens remains thin/less convex/less curved **allow** lens can't become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

Question	Answer	Marks	Guidance
2	**[Level 3]** Identifies Kevin's **and** Jeanette's cause **and** correction **and** at least one reason for and one against surgery. Quality of written communication does not impede communication of the science at this level. (5 – 6 marks) **[Level 2]** Identifies Kevin's **or** Jeanette's cause **or** correction **and** at least one reason for and one against surgery. Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks) **[Level 1]** Identifies Kevin's **or** Jeanette's condition **or** cause **or** correction **or** at least one reason for **or** one against surgery. Quality of written communication impedes communication of the science at this level. (1 – 2 marks) **[Level 0]** Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)	6	**This question is targeted at grades up to A.** **Indicative scientific points at level 1, 2 and 3 may include:** **Cause** • Kevin as eyeball too long or lens too fat/too refractive/not thin enough. • Jeanette eyeball too short or lens too thin/not refractive enough/not fat enough. **Correction** • Kevin needs concave / diverging lens for correction. • Jeanette needs convex/ converging lens. **Reasons for** • benefits outweigh surgery risks • work not hindered • may be sportsperson • weather problems of glasses • makes appearance better • no need to wear glasses • long-lasting remedy **Reasons against** • Valid reason for not having surgery e.g. risk of going wrong / fear/pain of operation • cost of surgery compared to glasses • may still need glasses later in life when eyes worsen **Indicative scientific points at level 1 may include:** **Condition** • Kevin is short-sighted / can only see near objects in focus • Jeanette is long-sighted / can only see distant objects in focus **Use the L1, L2, L3 annotations in Scoris. Do not use ticks.**
	Total	**6**	

Question			Answer	Marks	Guidance
3	(a)	(i)	**too** rounded (1) focuses light **before** the retina **or** bends / refracts light too much (1)	2	**allow too** powerful / **too** thick **ignore** long eyeball **not** reflects lights
		(ii)	concave (1)	1	**allow** diverging **allow** diagram: 
	(b)	(i)	(alternative / different) version of **a** gene (1)	1	**ignore** different types of gene **but allow** different types of a gene
		(ii)	both Seema and John do not have the disorder / condition / nanophthlamos (1) (**but**) they have children who have the disorder / condition / nanophthlamos **or** Kevin has the disorder (1)	2	**allow** Seema and John are carriers **allow** disorder appears in children whose parents do not have it (2) **allow** the disorder skips generations (2) **ignore** references simply to alleles, answer must refer to phenotype **ignore** 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	**allow** any clear genetic diagram **ignore** ½ / 0.5 / 1 in 2 **do not** award any ecf **allow** 50(%) (1) even if diagram incorrect
			Total	**9**	