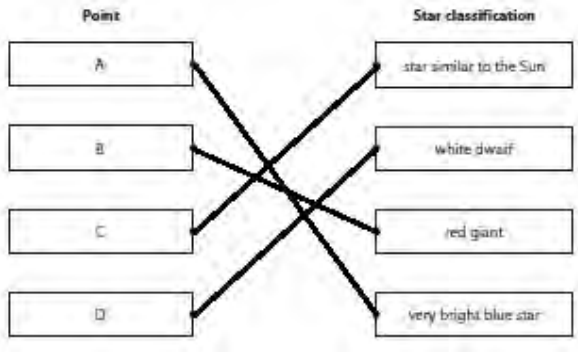
Question number	Answer	Notes	Marks
1 (a)	1 mark for each correct line;;;;  	reject any box from the left with 2 lines	4
(b)	(a measure of) brightness; (of a star) at a {standard / fixed / same} distance;	allow power, luminosity, intensity allow correct distance e.g. 10 parsecs/32(.6) light years	2

Total for Question 1 = 6 marks

Question number			Answer	Notes	Marks
6	(a)	(i)	**angle** of incidence;	ignore incident ray	1
		(ii)	recognising 67 (degrees) as anomalous; evaluation of a mean; e.g. mean angle = (22 + 23) / 2 = 23 (degrees)	allow 1 mark if anomalous result included e.g. 37, 37.3… (degrees) allow 22, 22.5 (degrees)	2
		(iii)	n calculated for multiple angles; mean value obtained **for n**; OR idea of graph plotted of sin(i) against sin(r); n found from gradient of (sin(i)-sin(r)) graph;		2
	(b)	(i)	substitution into n = sin(i) ÷ sin(r) ; evaluation; e.g. refractive index = sin(82) ÷ sin(47) (refractive index =) 1.4	 1.3 scores 1 mark only allow 1.35…	2
		(ii)	sin(c) = 1/n;	allow any correct rearrangement	1
		(iii)	substitution and rearrangement; evaluation; e.g. c = $\sin^{-1}(1/1.7) = \sin^{-1}(0.588…)$ (critical angle =) 36 (degrees)	 allow 36.03… (degrees)	2
	(c)		light undergoes TIR; (because) angle (of incidence) is greater than critical angle;		2

Total for Question 6 = 12 marks