Question Number	Answer		Mark
16(a)	f_{max} read from graph	**(1)**	
	Use of $c = f\lambda$	**(1)**	
	Use of $\lambda_{max}T = 2.898 \times 10^{-3}$ m K	**(1)**	
	$T = 3100$ (K)	**(1)**	**4**
	Example of calculation $f_{max} = 3.2 \times 10^{14}$ Hz $\lambda_{max} = \frac{3.0 \times 10^{8}\ \text{m s}^{-1}}{3.2 \times 10^{14}\ \text{Hz}} = 9.38 \times 10^{-7}$ m $T = \frac{2.898 \times 10^{-3}\ \text{m K}}{9.38 \times 10^{-7}\ \text{m}} = 3090$ K		
16(b)	Use of $A = 4\pi r^2$	**(1)**	
	Use of $L = \sigma A T^4$	**(1)**	
	$L = 4.52 \times 10^{24}$ W [ecf from (a)] **Or** $T = 5300$ K [ecf from (a)]	**(1)**	
	Conclusion made from comparison of calculated L with 10% of luminosity of the Sun [3.83×10^{25} W] **Or** conclusion made from comparison of T for a star with 10% of luminosity of the Sun with T calculated in (a)	**(1)**	**4**
	Example of calculation $L = 4\pi\ (2.62 \times 10^{8}\ \text{m})^2 \times 5.67\ \times\ 10^{-8}\ \text{W m}^{-2}\ \text{K}^{-4}\ (3100\ \text{K})^4$ $L = 4.52 \times 10^{24}\ W$ $\frac{L}{L_{Sun}} \times 100\% = \frac{4.52 \times 10^{24}\ W}{3.83 \times 10^{26}\ W} \times 100\% = 1.18\%$ Luminosity of Gliese-876 is less than 10% of Sun's luminosity. so claim is correct. Temperature of Gliese-876 is less than surface temperature of a star with 10% of the Sun's luminosity, so claim is correct.		
	Total for question 16		**8**