4	The photograph shows a filament bulb.	
	The filament is an emitter with 35% of the power output of a black body radiator of the same temperature.	
	(a) When a potential difference (p.d) of 2.0 V is applied across the bulb, there is a current of 0.37 A in the filament.	
	Calculate the temperature of the filament.	
	surface area of filament = $3.9 \times 10^{-6} \text{m}^2$	(2)
		(3)
	Temperature =	
	(b) In an experiment to investigate the efficiency of a filament light bulb a p.d. was applied. The p.d. and current were measured and the light bulb was observed. The p.d. was then increased and new measurements taken.	
	When a small p.d. is applied to the bulb, no light is visible. If the p.d. is gradually increased, the filament starts to glow and eventually appears white.	
	(i) Add to the graph to show the distribution of radiation from a black body at a	
	temperature of 2026 K.	
	Your answer should include a calculation.	(5)
	A	
	T	
	Mer.	
	Radiated power	
	Sadiat Carlotte Carlo	
	0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0	
	visible spectrum Wavelength/10 ⁻⁶ m	
	(ii) Use your graph to explain why filament light bulbs are considered inefficient.	
	(ii) Ose your graph to explain will mainene light outes are constanted inclination.	(2)
	(Total for Question 14 = 10 ma	nelza)
	(10tal 10f Question 14 = 10 ma	11 12 11