Question Number	Answer		Mark
18a	Use of resistors in parallel formula	(1)	
	Resistance of parallel section of circuit calculated as 1.33Ω	(1)	
	Total circuit resistance = 2Ω + their parallel resistance **Or** Use of ratio of resistance:p.d.	(1)	
	Use of $I = V/R$ to calculate total circuit current (3A) **Or** Use of $I = V/R$ to calculate p.d. across resistor A (6V)	(1)	
	Use of $P = VI$, $P = V^2/R$ or $P = I^2R$	(1)	
	A = 18W, B = 2W, C = 2W, D = 8W	(1)	**6**
	Example of calculation $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2}$ (for parallel combination) $\frac{1}{Rp} = \frac{1}{2} + \frac{1}{4}$ $R_p = 1.33\ \Omega$ Total resistance in circuit = (1.33 + 2.00) = 3.33 Ω $I = V/R$ (for whole circuit) = 10.0 V / 3.33 Ω = 3.00 A For resistor A, $P = I^2R = (3.00\ A)^2 \times 2.00\ \Omega = 18$ W Current through D = $\frac{2}{3}$ (3.00 A) = 2.00 A For D, $P = I^2R = (2.00\ A)^2 \times 2.00\ \Omega = 8$ W For B and C, $P = I^2R = (1.00\ A)^2 \times 2.00\ \Omega = 2$ W		
18b	(With resistor D removed there is) lower circuit current **Or** (with resistor D removed there is) lower p.d. across A	(1)	
	Seeing an appropriate power equation to support the conclusion that power would be less in A	(1)	**2**
18c	As p.d increases, current increases	(1)	
	(As current increases,) temperature increases (allow "heats up")	(1)	
	Atoms/ions/lattice have greater vibrations/KE	(1)	
	Increased rate of collisions between electrons and atoms/ions	(1)	**4**
	Total for question 18		**12**