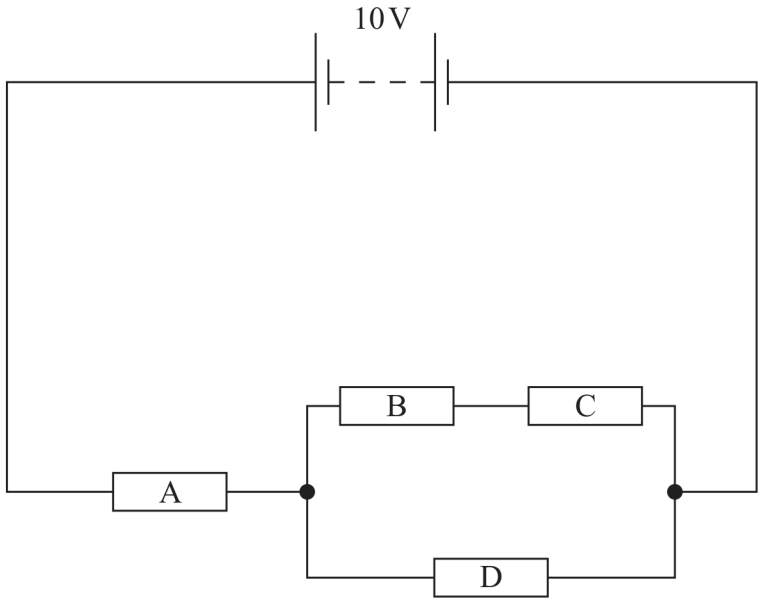
**18** Four identical resistors, A, B, C and D, are placed in a circuit as shown.




(a) Determine the power dissipated in each of the resistors.

resistance of each resistor = 2.0 Ω

**(6)**

(b) Explain, without further calculation, what would happen to the power dissipated by resistor A if resistor D were disconnected from the circuit.

**(2)**

(c) If the resistors in the circuit used in (a) were replaced with filament lamps, the resistance of each lamp would be different depending on the potential difference across it.

Explain, in terms of particles, why the resistance of a filament lamp increases as the potential difference across the filament increases.

**(4)**

**(Total for Question 18 = 12 marks)**