

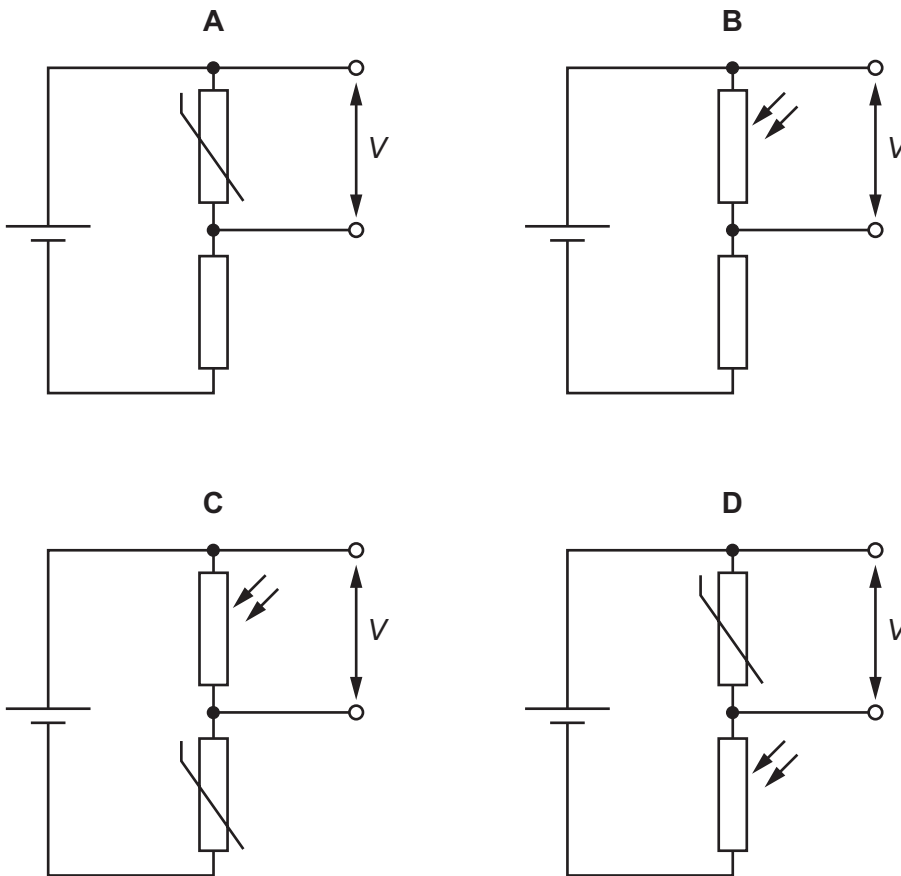
- 36 The sum of the currents entering a junction in an electrical circuit is always equal to the sum of the currents leaving the junction.

Why is this?

- A It is a consequence of the conservation of charge.
- B It is a consequence of the conservation of electromotive force.
- C It is a consequence of the conservation of energy.
- D It is a consequence of the conservation of potential difference.

- 37 In the circuits shown, the temperature remains constant.

In which circuit does the potential difference (p.d.) V increase with increasing light intensity?



38 Carbon-14 decays into nitrogen-14 by emitting a β^- particle.

Which statement explains why the β^- particles are emitted with a range of different kinetic energies?

- A The carbon-14 nuclei have slightly different masses.
- B The emitted β^- particles have a range of different masses.
- C The energy released in the decay process is different for each carbon-14 nucleus that decays.
- D The energy released in the decay process is shared between the nitrogen-14 nucleus, a β^- particle and an antineutrino.

39 A nucleus of a radioactive element emits an α -particle, then a β^- particle and then another β^- particle.

Which statement describes the final element that is produced?

- A It is a different element of higher proton number than the original element.
- B It is a different element of lower nucleon number than the original element.
- C It is an isotope of the original element.
- D It is the same element as the original element but with a different proton number.

40 How many hadrons, baryons and mesons are there in a nucleus of ${}^9_4\text{Be}$?

	hadrons	baryons	mesons
A	9	4	5
B	9	5	4
C	9	9	0
D	13	9	0



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