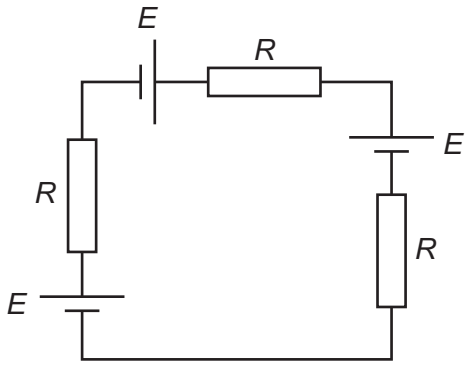
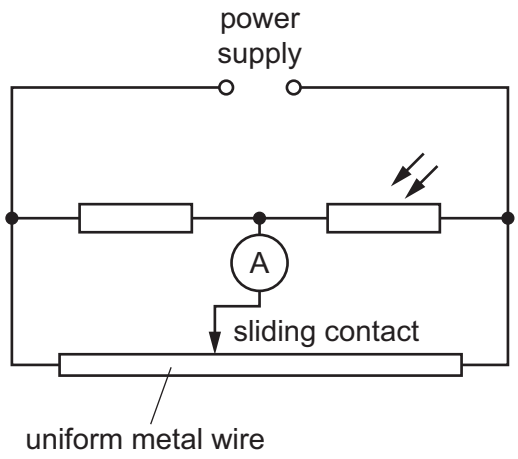
36 Three identical cells each have electromotive force (e.m.f.) E and negligible internal resistance. The cells are connected to three identical resistors, each of resistance R, as shown.



What is the potential difference across one of the resistors?

A 0 **B** $\frac{E}{3}$ **C** $\frac{2E}{3}$ **D** E

37 In the potentiometer circuit shown, the reading on the ammeter is zero.



The light-dependent resistor (LDR) is then covered and the ammeter gives a non-zero reading.

Which change could return the ammeter reading to zero?

A decreasing the supply voltage

B increasing the supply voltage

C moving the sliding contact to the left

D moving the sliding contact to the right

38 What are isotopes?

A nuclei of different elements with the same number of neutrons

B nuclei of different elements with the same number of nucleons

C nuclei of the same element with different numbers of neutrons

D nuclei of the same element with different numbers of protons

39 A neutron ${}^{1}_{0}\text{n}$ is fired at a ${}^{235}_{92}\text{U}$ nucleus. The neutron is absorbed by the nucleus which then splits to form nuclei of ${}^{141}_{56}\text{Ba}$ and ${}^{92}_{36}\text{Kr}$.

What is the number of free neutrons emitted when the ${}^{235}_{92}\text{U}$ nucleus splits?

A 0 **B** 1 **C** 2 **D** 3

40 A π^+ meson has a charge of $+e$, where e is the elementary charge. It consists of an up quark and one other quark.

What could be the other quark in the π^+ meson?

A anti-down

B anti-up

C bottom

D charm

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