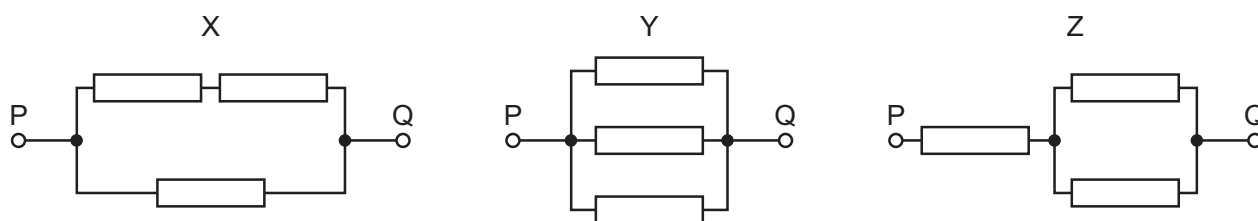
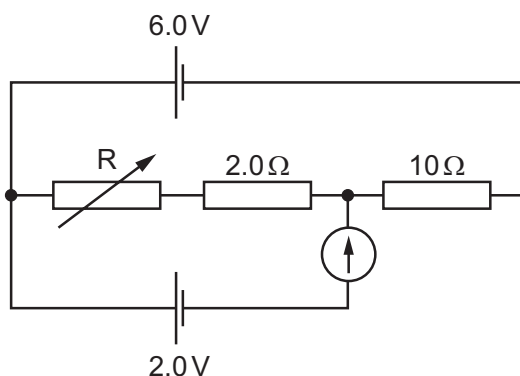


- 36 Three identical resistors are connected between terminals P and Q in different networks X, Y and Z as shown.



What is the order of increasing combined resistance between P and Q (lowest first)?

- A $X \rightarrow Y \rightarrow Z$
 B $X \rightarrow Z \rightarrow Y$
 C $Y \rightarrow X \rightarrow Z$
 D $Y \rightarrow Z \rightarrow X$
- 37 The diagram shows a variable resistor R and two fixed resistors connected in series in a circuit to act as a potential divider.



The cell of electromotive force (e.m.f.) 6.0V has negligible internal resistance. A cell of e.m.f. 2.0V and a galvanometer are connected into the potential divider. The resistance of R is varied until the galvanometer reads zero.

What is the resistance of resistor R?

- A 3.0Ω B 5.0Ω C 8.0Ω D 18Ω

38 The table gives some data relating to four neutral (uncharged) atoms W, X, Y and Z.

	W	X	Y	Z
nucleon (mass) number	16	17	17	18
total number of particles (protons, neutrons and electrons) in the atom	24	26	25	28

Two of the atoms are isotopes of the same element.

What is the proton number of this element?

- A 7 B 8 C 9 D 10

39 What is **not** a fundamental particle?

- A electron
 B neutrino
 C neutron
 D positron

40 An unstable nucleus decays and emits a β^- particle.

Which changes, if any, occur to the quark composition of the nucleus?

	quark changes	
	up quarks	down quarks
A	+1	0
B	+1	-1
C	-1	+1
D	0	+1

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